

Service
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Service Manual

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PHILIPS

SPECIFICATIONS

GENERAL

Mains voltage/setting	:	230V for -/20/22 240V for -/25/30 Switchable 120V - 230V (Set at 230V) for -/21
Mains frequency	:	50Hz
Mains breakdown protection	:	10 minutes
Clock Accuracy	:	<4 sec/day
Power consumption	:	180W max.
Dimension centre unit	:	240 x 352.5 x 273mm

TUNER : FM SECTION

Tuning range	:	87.5MHz - 108MHz
IF frequency	:	10.7MHz
Aerial input	:	75 Ω coaxial
Sensitivity at 26dB S/N	:	< 8 μ V {6.9 μ V}
Selectivity at 600kHz bandwidth	:	> 20dB {30dB}
IF rejection	:	> 50dB {60dB}
Image rejection	:	> 20dB {25dB}

TUNER : AM SECTION

Tuning range	MW	:	522kHz - 1611kHz
	LW	:	153kHz - 279kHz
IF frequency		:	450kHz
Sensitivity at 26dB S/N	MW	:	< 3.6mV/M {3.2mV/M}
	LW	:	< 6.0mV/M {6.0mV/M}
Selectivity at 18kHz bandwidth	MW	:	> 16dB {20dB}
	LW	:	> 20dB {24dB}
IF rejection	MW	:	> 24dB {24dB}
	LW	:	> 26dB {26dB}
Image rejection	MW	:	> 28dB {28dB}
	LW	:	> 30dB {30dB}

AMPLIFIER

Output power at 10% distortion	:	2 x 27W -1dB
Speaker impedance	:	2 x 6Ω L/R
Frequency response within -3dB	:	63Hz - 15kHz
DBB & Equalizer control	:	-6dB to +6dB
Headphone output at 32Ω	:	25mW
Input sensitivity	Aux/TV	: 400mV at 47kΩ
	Mic	: 1.5mV at 600Ω for -/21 and -/30

CASSETTE RECORDER

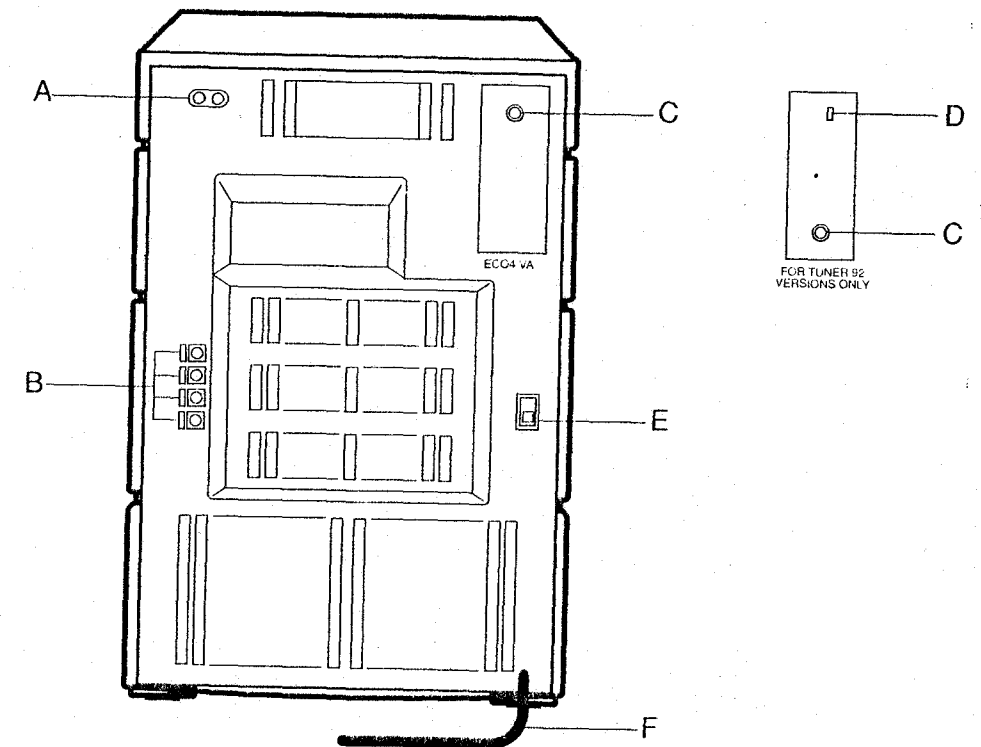
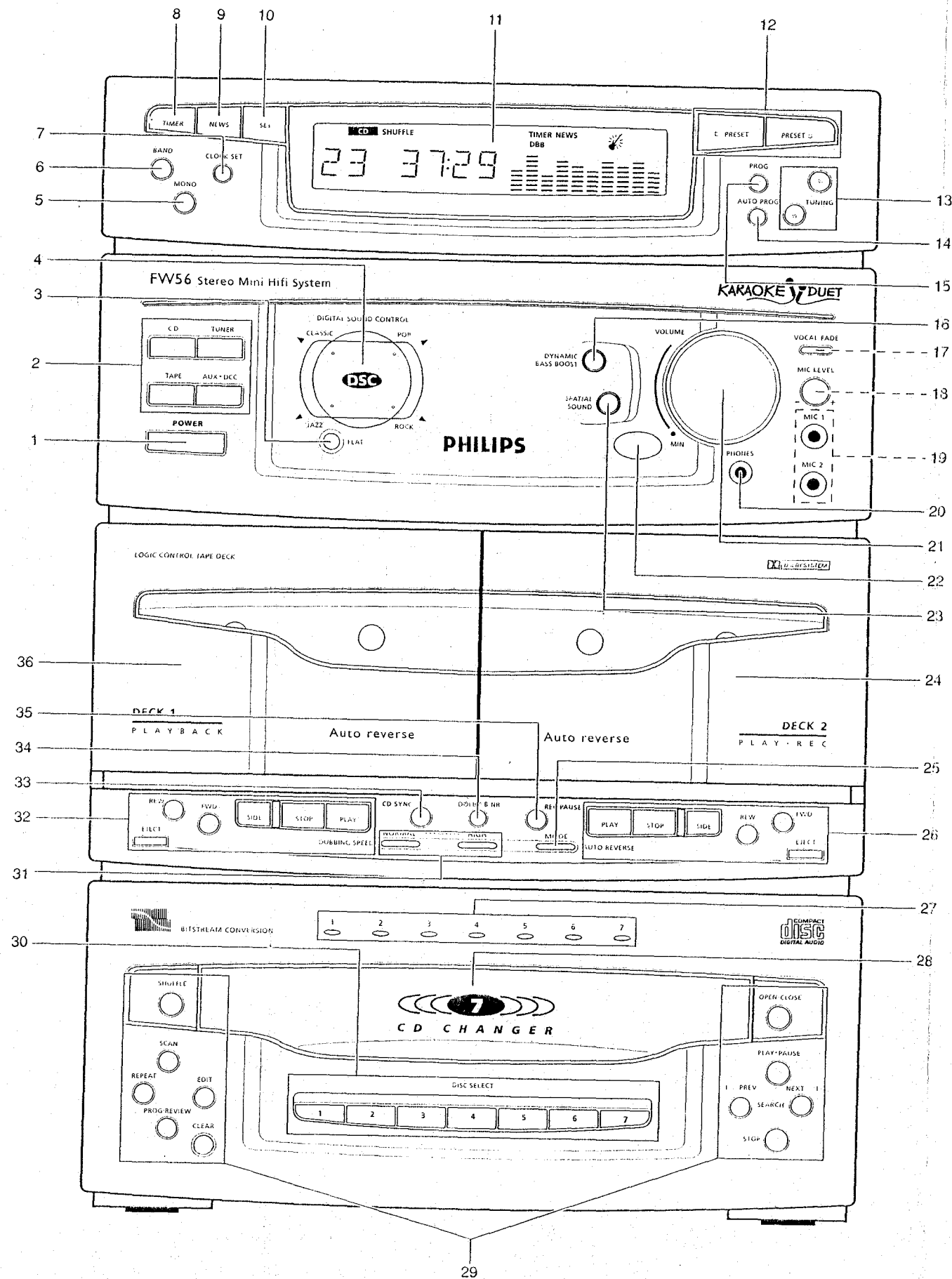
Number of track	:	2 x 2 stereo
Tape speed	:	4.76 cm/sec $\pm$ 2% 1.7 x 4.76 cm/sec
Wow and flutter	:	< 0.4%
Fast-wind time C60	:	130 sec
Bias system	:	90kHz $\pm$ 5kHz
Recording playback frequency response within -5dB	:	80Hz - 12.5KHz
Signal to noise ratio	IEC I	: > 47dB
	IEC II	: > 47dB
	Dubbing	: > 47dB
Dolby Noise Reduction Factor	:	8.5dB

COMPACT DISC

Frequency response within +2dB/-4dB	:	20Hz - 20kHz
Signal/Hiss ratio	:	> 75dB
Distortion at 1kHz	:	< 0.03%
Channel difference at 1kHz	:	< 2dB
Channel crosstalk at 1kHz	:	> 60dB
De-emphasis	:	0 or 15/50 μ S (Switched by subcode on the disc)

{..} Values for /22 only

CONNECTIONS & CONTROLS



CONNECTIONS AND CONTROLS

1	Power	1414	27	Disc indicator	
2	Function controls		28	CDC Tray	
	CD	1421	29	CDC controls	
	Tuner	1426		Shuffle	1450
	Tape	1420		Scan	1451
	Aux-DCC	1410		Repeat	1459
3	Flat	1430		Program/Review	1458
4	Digital Sound Control			Edit	1454
	Classic	1431		Clear	1455
	Pop	1432		Stop	1456
	Jazz	1433		Play/Pause	1460
	Rock	1434		Open/Close	1452
5	Mono	1419		Next	1461
6	Band	1425		Previous	1457
7	Clock set	1418			
8	Timer	1424	30	Disc select	
9	News	1423	31	Dubbing speed	
10	Set	1422		Normal	1472
11	LCD display	1401		High	1473
12	Preset up/down	1428, 1429	32	Play Deck controls	
13	Tuning up/down	1412, 1416		Eject	
14	Auto program	1417		Wind <<	1479
15	Program	1413		Wind >>	1478
16	Dynamic bass boost	1411		Side	1481
17 *	Vocal fade	1553		Stop	1474
18 *	Mic level	3673	33	Play	1480
19 *	Mic inputs	1551, 1562	34	CD Sync	1475
20	Headphone socket	1550	35	Dolby B NR	1477
21	Volume	3629	36	Record/Pause	1476
22	IR sensor	6406		Cassette compartment 1	
23	Spatial Sound	1415	A	Aux-TV input	1552
24	Cassette compartment 2		B	Loudspeaker sockets	1304
25	Mode	1471	C	FM antenna socket	1101 or 1110
26	Rec/Pb Deck controls		D	AM antenna socket	1111
	Play	1468	E	Voltage selector	1281
	Stop	1470	F	Mains cord	
	Side	1469			
	Wind <<	1467			
	Wind >>	1466			
	Eject				

* For Karaoke version only

SERVICE TEST PROGRAM 1

Operating sequence	Display shows	Remarks	In case of problems check
Hold "Program" and "Preset Up" button down while Power on to enter Service test program.	XX YY-S # This is the main menu.	where: XX - Type no. numeric YY - Master µP version S - Service mode	
Press "Program"	PASS or P Main menu reappears after 2 seconds.	Eeprom test	Check IC if Display shows ERR or N
Press "Autoprogram"	NEW or N Main menu reappears after 2 seconds.	Eeprom is now reset to default data.	
Press "Clock Set"	32K or 32	The Alarm buzzer is turned on. An output signal of 4096Hz is available at pin 37 of the main µProcessor.	Check X'tal
Press "Clock Set"	8M or 8	The output signal at pin 37 is now 3906.25Hz.	Check 8MHz oscillator
Press "Clock Set"	Main menu reappear.		
Press "Set Timer/News"	FAST or F NOM or N Main menu reappears after 2 seconds.	Pressing "Set Timer/News" key will alternate between Fast and Normal speed. In the Fast mode the clock increases at 1 minute per second. Leaving the test program now will allow quick customer checks on the clock/timer/alarm function.	Ensure the clock is in normal speed before returning to customer.
Press "Tuning Up"	U	Volume turns clockwise slowly until maximum.	
Press "Tuning Down"	D	Volume turns anti-clockwise until minimum.	
Press "Mono" and followed by any key on the set or Remote control. Press "Mono" to return to Main menu	See key test Table 1 and 5.		
Press "News"	See Table 2 and Main menu.	Pressing the "News" key will scroll through the 4 different displays and the Main menu.	
Press "Timer"	AUX TAPE CD TUNER Main menu reappears after 2 seconds.	During source switching the set is not muted.	
Disrupt the mains supply to exit the Service test program.			Ending the Service test by pressing the "Power" key from the Main menu will render : * CD error codes to be displayed. * Tuner "Program" and "Autoprogram" keys are deactivated.

Note: XX - Model model (eg 56 for FW56, etc.)
YY - Software version, counting down from 99

TRADE MODE

Operating sequence	Display shows	Remarks
At the standby mode, hold the "Program" key depressed for 2-3 seconds. To exit Trade mode repeat the above procedure or activate the set with the Remote control.	Commercial story	The set performs normally except the Commercial story will be displayed after 6 seconds whenever the set is placed into standby mode.

TABLE 1. SERVICE REMOTE CONTROL KEY TEST TABLE

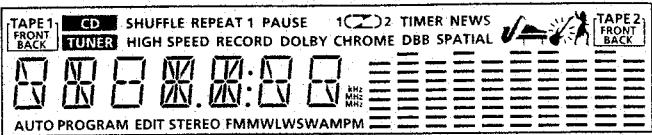
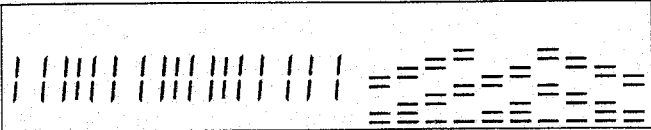
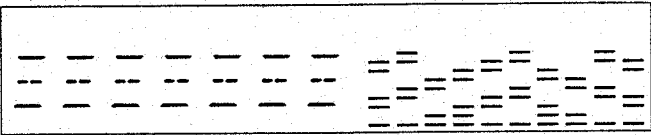
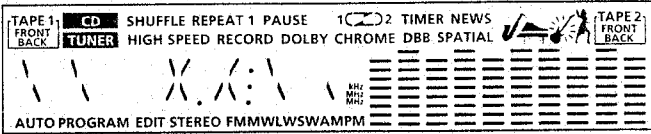
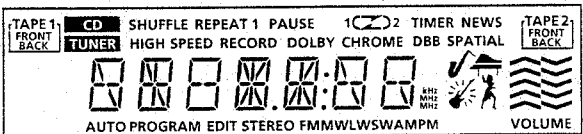
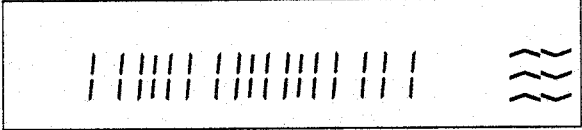
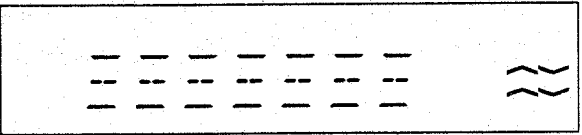
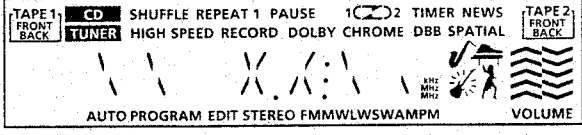
Function/Tuner keys	Display	CD keys	Display	Tape keys	Display
Standby	19 RC	CD	09 RC	Tape 1	70 RC
Sleep	28 RC	Previous	66 RC	Tape 2	71 RC
News	15 RC	Next	65 RC	Side	75 RC
DSC	76 RC	Search -	32 RC	Rewind	74 RC
Volume -	78 RC	Pause	27 RC	F. Forward	73 RC
Volume +	77 RC	Search +	31 RC	Stop	67 RC
Tuner	20 RC	Stop	59 RC	Play	72 RC
Preset Down	17 RC	Play	26 RC		
Preset Up	18 RC	Disc Up	79 RC		
Tuning Down	06 RC				
Tuning Up	02 RC				

Note: "RC" disappears when the key is released.

SERVICE TEST PROGRAM 2

Operating sequence	Display shows	Remarks	In case of problems check
To perform CDC test press "CD" at the Main menu screen. Service level 1 is now achieved. Press "Next" Press "Prev" Press "Shuffle" Press "Scan" Press "Stop" will exit CDC test and return to Main menu.	<i>CDC AA</i> <i>SLED O</i> <i>SLED I</i> <i>PLAY</i> <i>STOP</i>	The CDC servo version is display. AA = version number The sledge will move outward. The sledge will move inward. Start the Turntable motor in the play direction. Start the Turntable motor in the brake direction.	Pressing "Power" key at the Main menu screen will to exit Service test and enter into Service Play mode. The set will perform as normal except in the CD mode error codes will be displayed. A list of error codes are found in Table 3.
Press "Play" - Service level 2 Press "Stop"	<i>FOC 1</i>	Laser is turned on and focus is achieved. Return to Service level 1.	Check the laser and focus circuits if the display shows <i>FOC 0</i>
Press "Play" - Service level 3 Press "Stop"	<i>DISC</i>	Disc motor start to turn. Return to Service level 1.	
Press "Play" Press "Stop"	<i>RDL</i>	The Radial servo turns on and music can be heard at the Loudspeakers. Return to Service level 1.	
To perform Tuner test press "Tuner" at the Main menu screen. Use the "Preset Up" and "Preset down" to display the loaded frequencies.	<i>ZZZ</i> See Table 4.	Tuner version is display. ZZZ = Tuner version Service frequencies are now loaded into the EEROM of the μProcessor.	
To end the Service test program disrupt the mains supply.			Ending the Service test by pressing the "Power" key from the Main menu will render: * CD error codes to be displayed. * Tuner "Program" and "Autoprogram" keys are deactivated.

Table 2. Display and Disc indicators

For all versions except /37		
Steps	LCD display	Disc indicator
1		Fully on
2		Red for odd numbers Green for even numbers
3		Green for odd numbers Red for even numbers
4		Fully off
For /37 only		
Steps	LCD display	Disc indicator
1		Fully on
2		Red for odd numbers Green for even numbers
3		Green for odd numbers Red for even numbers
4		Fully off

DISASSEMBLY DRAWING

Disassembly sequence:
A - B - C - D - E - F - G - H - J - K

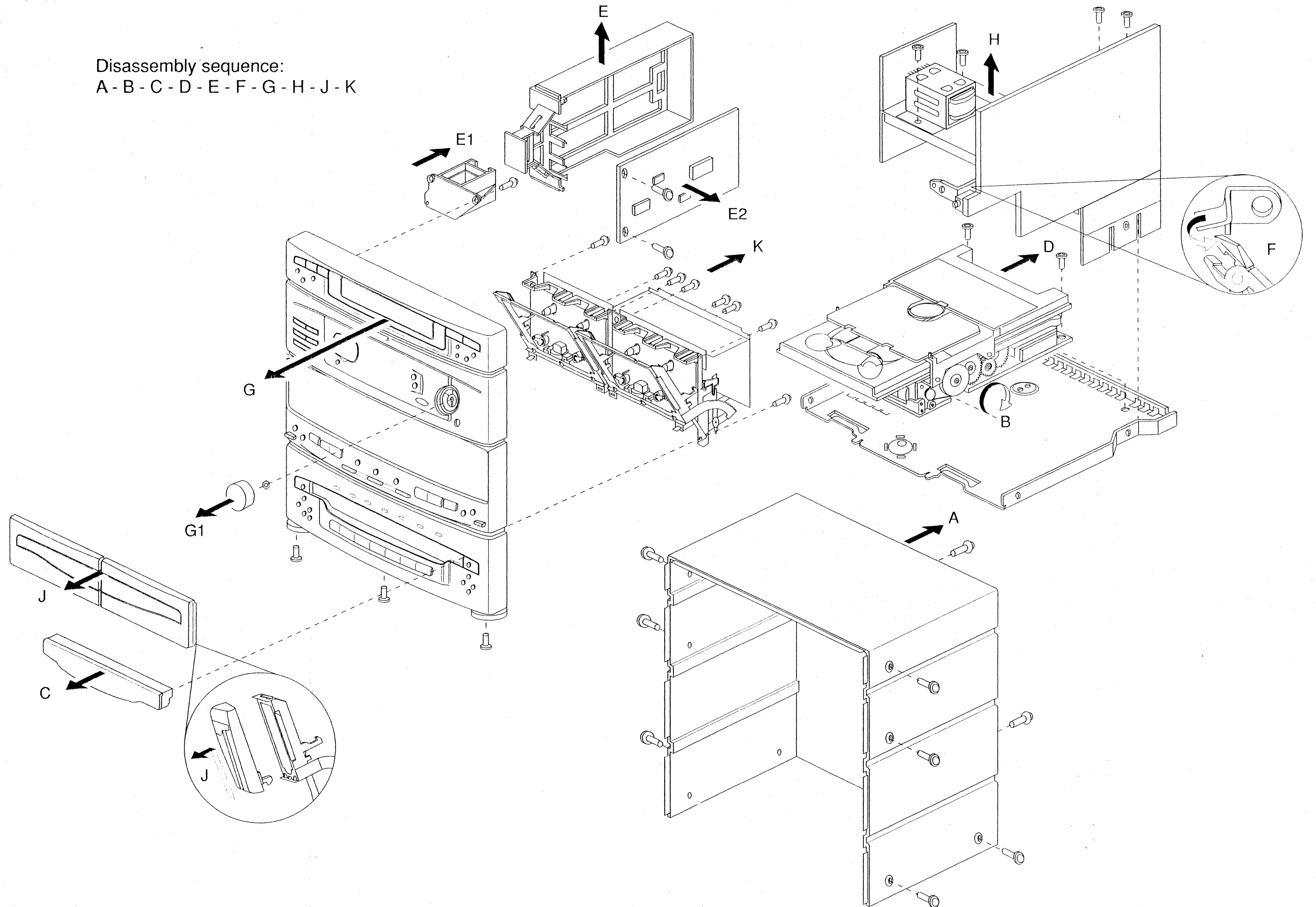


TABLE 3. CD ERROR CODES TABLE

Error codes		Error description
E 1002	F	Focus error
E 1008	W	Out of lead-in during reading TOC
E 1010	F	Radial error
E 1011	W	Sledge error
E 1012	F	Fatal sledge error
E 1013	F	Turntable motor error
E 1042	F	Internal stack overflow
E 1050	W	Edit calculation error
E 1070	F	Centering of the tray not finished on time
E 1071	F	Tray closing not finished within time
E 1072	F	Tray has not opened within time
E 1076	W	Desired disc position could not have been reached within time
E 1077	F	Pickup Switch SW1 or SW2 did not open as expected within a certain time
E 1078	F	Pickup Switch SW1 or SW2 did not close as expected within a certain time
E 1079	W	Tray open position not reached within time
E 1080	F	Miscounting of the stocker position occurred, position was correct at position 1.

Note: F = Fatal error and set stops operation
W = Warning and set continues operation

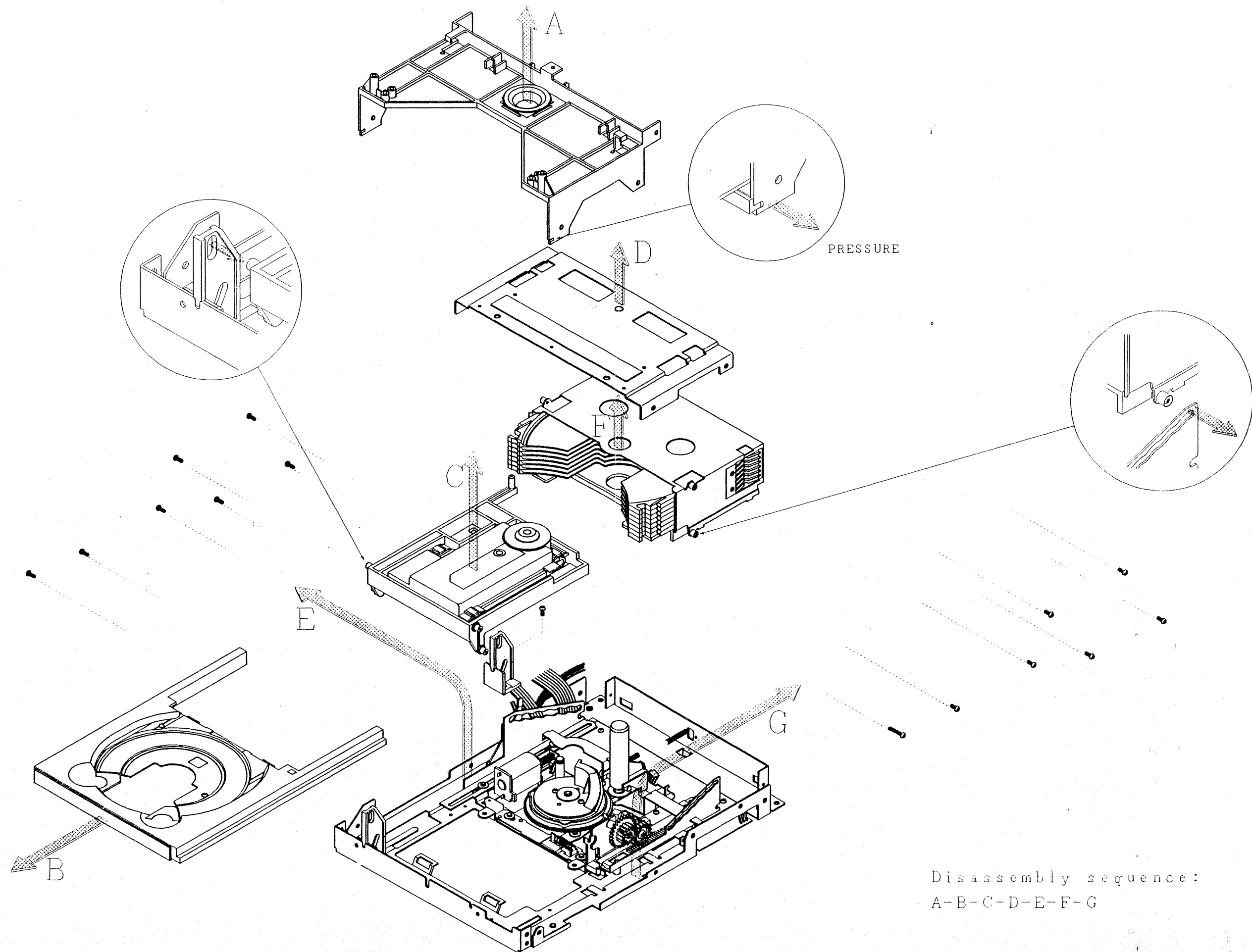
TABLE 4. TUNER SERVICE TEST FREQUENCIES

PRESET	Europe "EUR"	East Eur. "EAS"	USA "USA"	Oversea "OSC"	Japan "JAP"
1	108.00 MHz	108.00 MHz	108.00 MHz	108.00 MHz	90.00 MHz
2	87.50 MHz	65.81 MHz	87.50 MHz	87.50 MHz	76.00 MHz
3	1611 kHz	1611 kHz	1710 kHz	1710 kHz	1629 kHz
4	522 kHz	522 kHz	530 kHz	530 kHz	522 kHz
5	279 kHz	279 kHz	-	-	-
6	153 kHz	153 kHz	-	-	-
7	98.00 MHz	98.00 MHz	98.00 MHz	98.00 MHz	80.00 MHz
8	558 kHz	558 kHz	560 kHz	560 kHz	558 kHz
9	1494kHz	1494kHz	1500kHz	1500kHz	1494kHz
10	549kHz	549kHz	550kHz	550kHz	549kHz

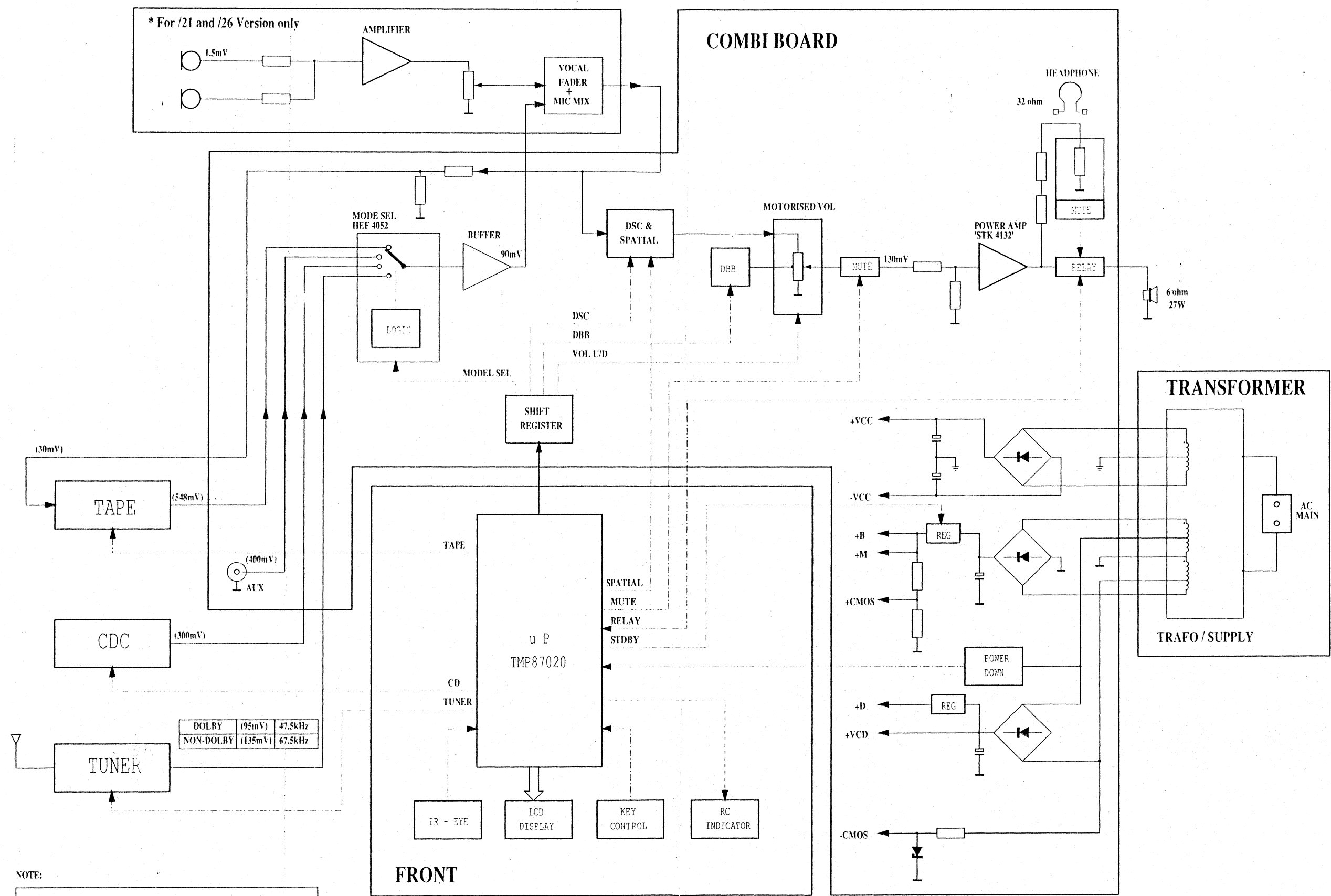
TABLE 5. SERVICE SET KEY TEST TABLE

Timer/News/Tuner keys	Display	CD/Tape Keys	Display	CD Keys	Display
Timer	14	Wind A < <	34	Shuffle	61
News	15	Wind A > >	33	Scan	62
Set	16	Side A	36	Repeat	54
Band	13	Stop A	37	Prog/Review	53
Clock Set	12	Play A	35	Clear	58
Mono	11	CD Sync	38	Edit	57
Preset Down	17	Dolby B NR	40	Stop	59
Preset Up	18	Rec-Pause	39	Play-Pause	55
Prog	01	Normal Speed	43	Open-close	63
Autoprogram	05	High Speed	44	Next	56
Tuning Up	02	Mode	42	Previous	60
Tuning Down	06	Play B	47	Disc 1	49
CD	09	Stop B	41	Disc 2	50
Tuner	20	Side B	48	Disc 3	51
Tape	10	Wind B < <	46	Disc 4	52
Aux-DCC	04	Wind B > >	45	Disc 5	64
Power	08			Disc 6	29
Classic	23			Disc 7	30
Pop	22				
Jazz	21				
Rock	25				
Flat	24				
Dynamic Bass Boost	03				
Spatial Sound	07				

CDC DISASSEMBLY DRAWING



BLOCK DIAGRAM

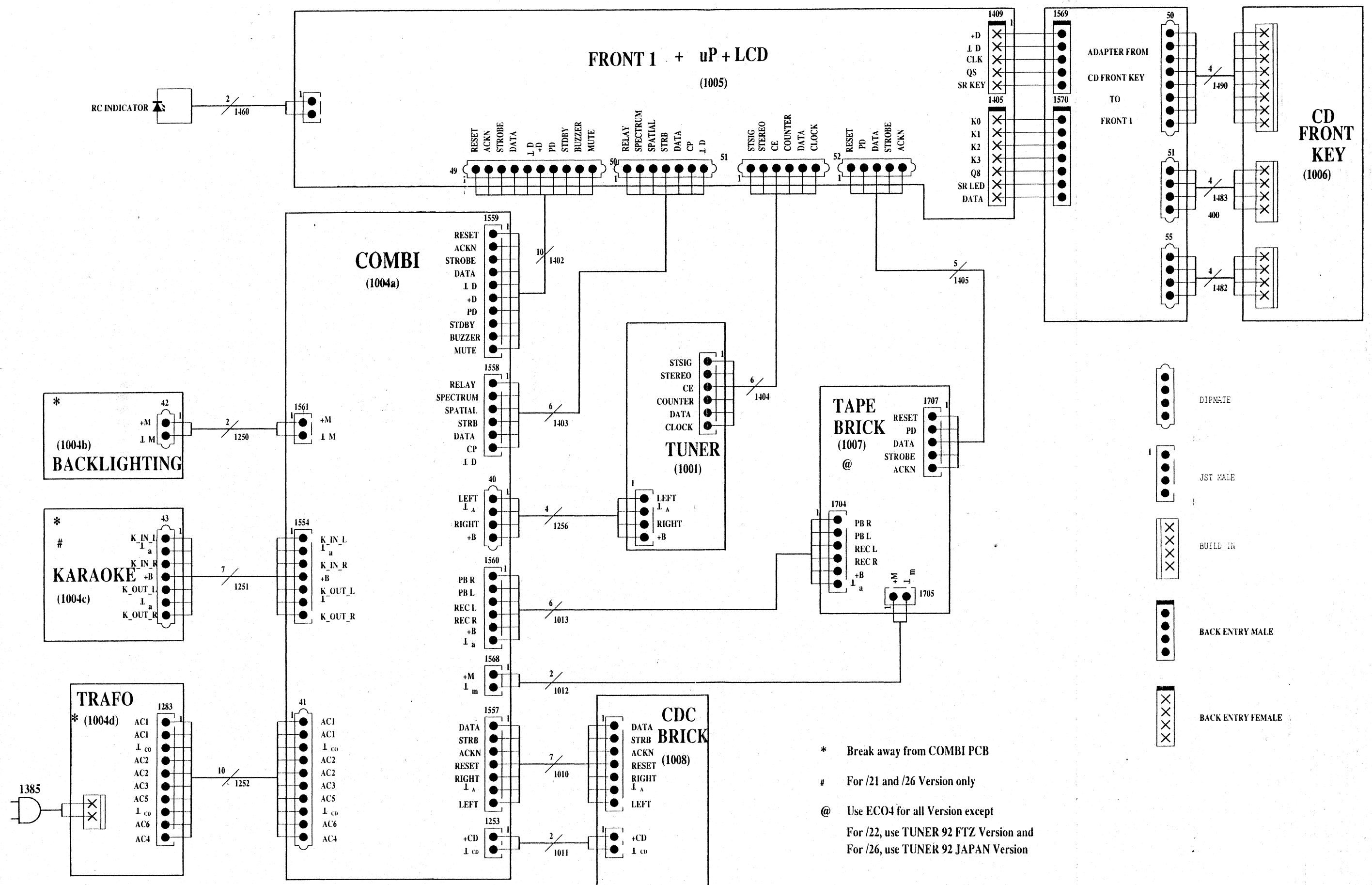


NOTE:

TUNER MODULE

EC04VA for all Version except
For /22, use TUNER 92 with FTZ Version and
For /26, use TUNER 92 JAPAN Version

WIRING DIAGRAM



(GB)

All ICs are susceptible. Careless handling can drastically reduce their life. When replacing, connect the pins correctly. Keep components at room temperature.

(F)

Tous les semi-conducteurs sont sensibles à la décharge électrostatique. Leur durée de vie peut être considérablement réduite en cas de manipulation incorrecte. Lors du remplacement, assurez-vous de bien connecter les broches. Gardez les composants à température ambiante. Veillez à utiliser des outils appropriés pour éviter tout dommage.

(GB)

Safety condition must be used.

(NL)

Veiligheidsconditie moet worden gebruikt.

(I)

Le norme di sicurezza deve essere rispettata.

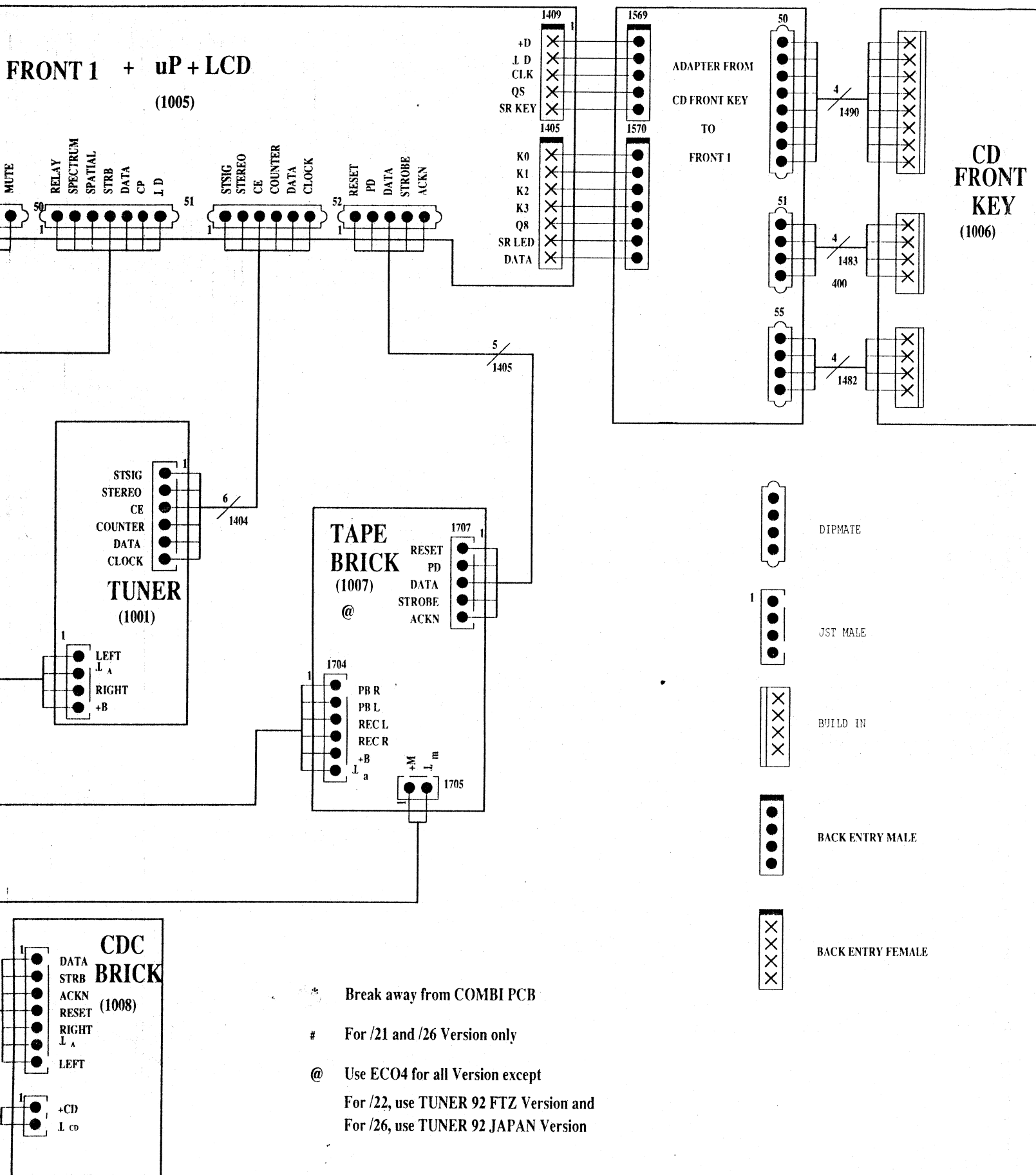
(F)

Les normes de sécurité doivent être respectées.

(D)

Bei jeder Reparatur muss die Sicherheitsvorschrift beachtet werden.

"After service, check for leakage of oil or other fluids from the engine and its components."



(GB) WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité. Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

ESD



(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op ditze!fde potentiaal.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD). Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren. Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes. Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialeto a resistenza. Assicurarasi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(I)

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

(F)

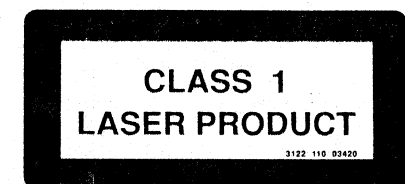
Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".



(GB) Warning !

Invisible laser radiation when open. Avoid direct exposure to beam.

(S) Varning !

Ösynlig laserstrålning när apparaten är öppnad och spårren är urkopplad. Betrakta ej strålen.

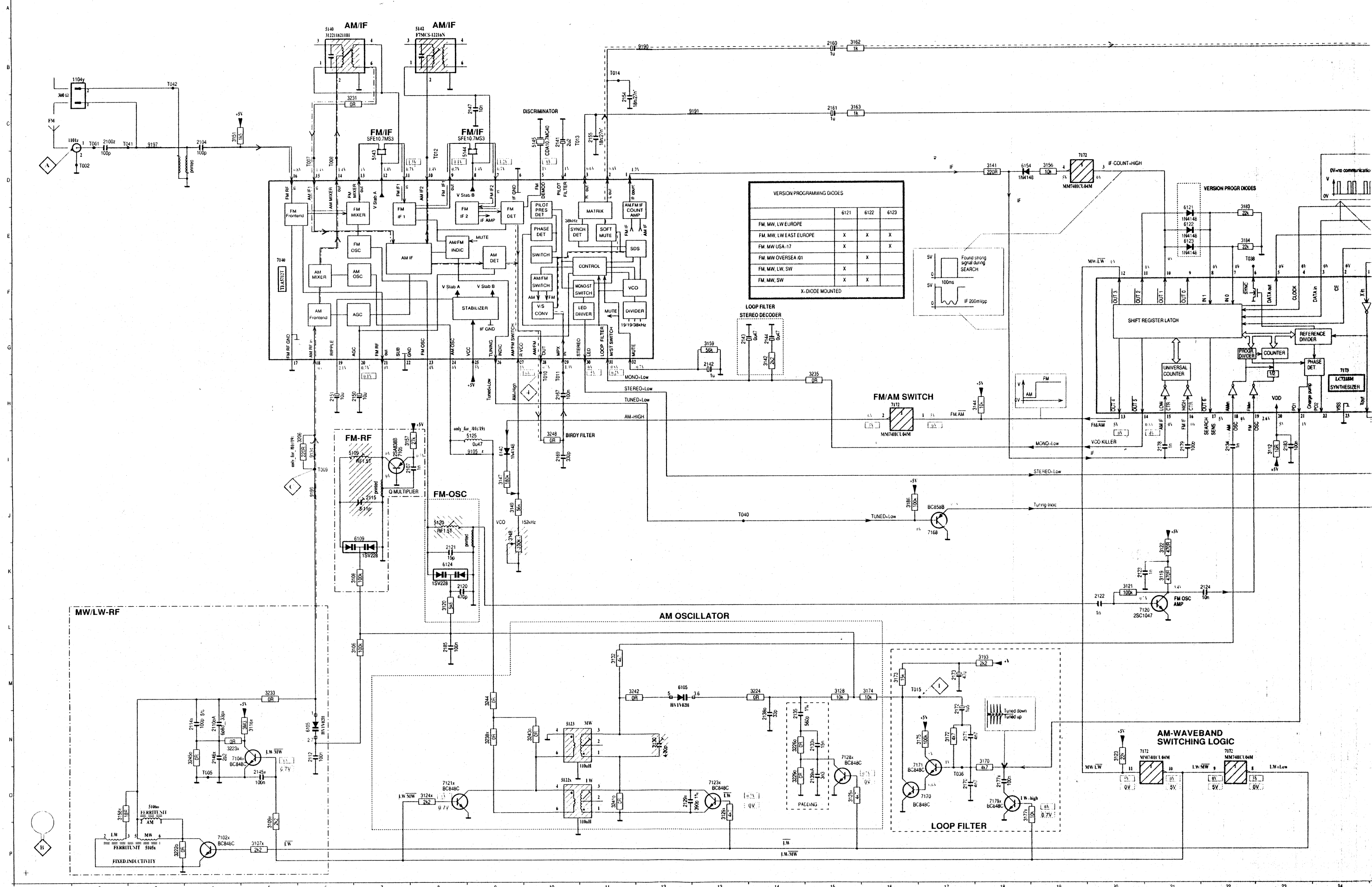
(SF) Varoitus !

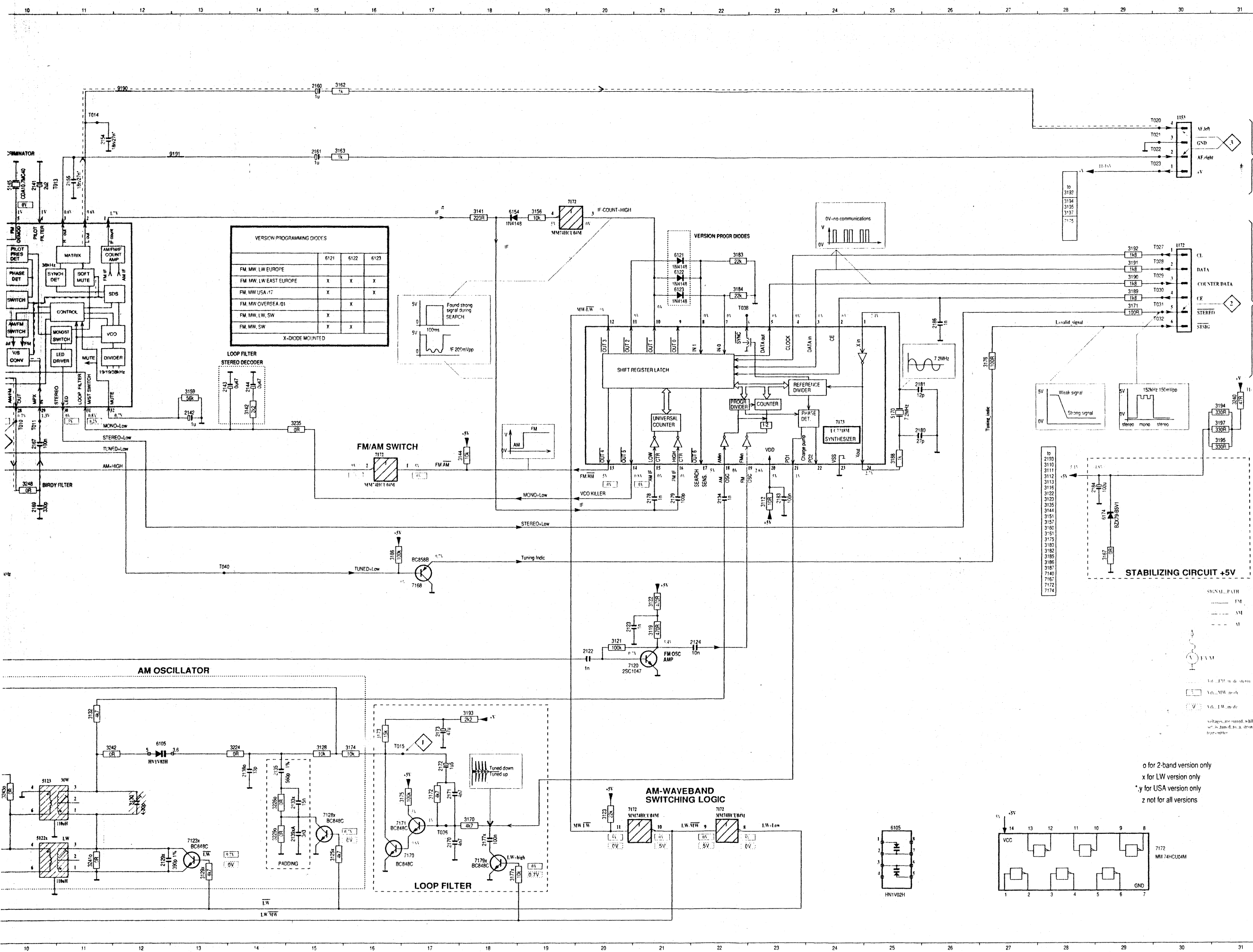
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

(DK) Advarse !

Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for strålning.

TUNER UNIT ECO4-VA (MIDI)





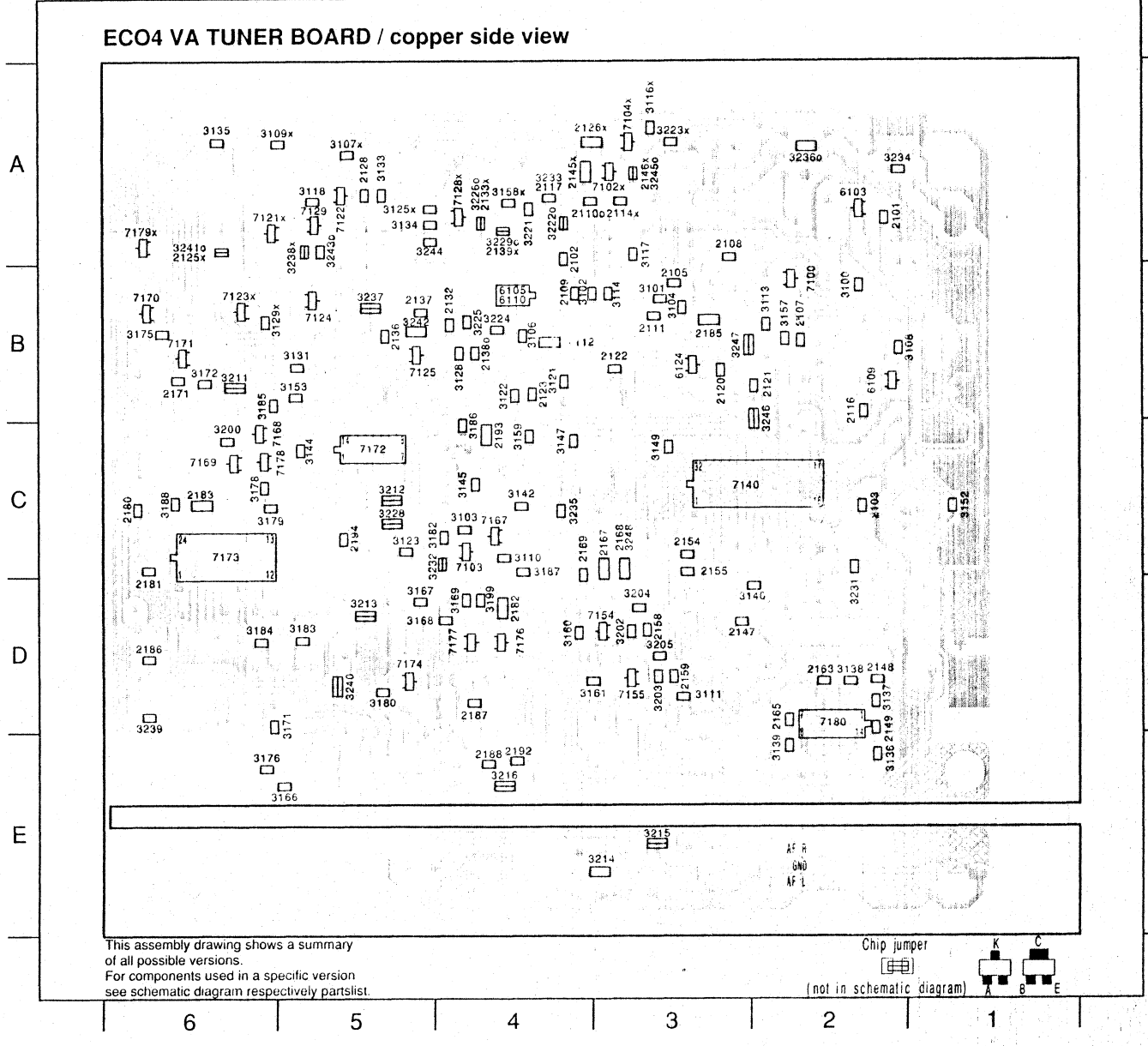
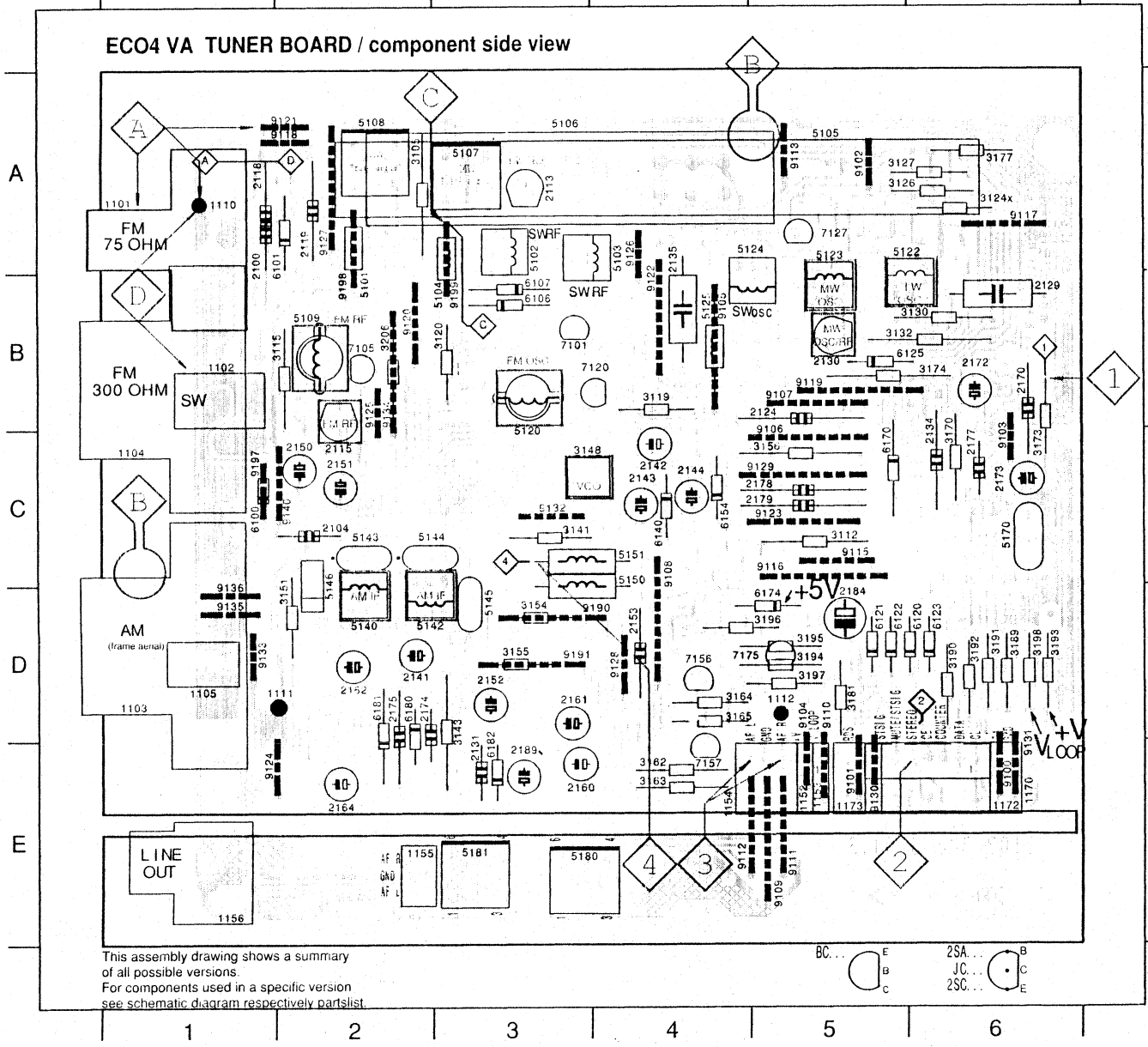
- 1101z C1
- 1104y C2
- 1151 B3
- 1172 D30
- 1202 C2
- 1204 C4
- 2107 I8
- 2110a N4
- 2112 N6
- 2114v N4
- 2115 J7
- 2120 K8
- 2121 K8
- 2122 K20
- 2124 K22
- 2125 O12
- 2130 N12
- 2133x N15
- 2134 I22
- 2135 N14
- 2138o N14
- 2139 O15
- 2141 C10
- 2142 G13
- 2143 G13
- 2144 G14
- 2145x O5
- 2146x N4
- 2147 C9
- 2150 H7
- 2151 B15
- 2154 C11
- 2155 C12
- 2160 B16
- 2161 C15
- 2167 H10
- 2169 I10
- 2170 O17
- 2171 N17
- 2172 M17
- 2173 M17
- 2174x O18
- 2175 I21
- 2179 I21
- 2180 H25
- 2181 G25
- 2183 I23
- 2184 I29
- 2185 L8
- 2186 F25
- 3106 L7
- 3107x P5
- 3108 K7
- 3109 O5
- 3112 P5
- 3115x L4
- 3115 K21
- 3121 K20
- 3122 K21
- 3123 K20
- 3124x O8
- 3125 O15
- 3128 M15
- 3129x O13
- 3130 M10
- 3141 D18
- 3142 G14
- 3144 H18
- 3147 I9
- 3148 J9
- 3149 J9
- 3151 C4
- 3156 D19
- 3157 I7
- 3158x O2
- 3159 G13
- 3163 B15
- 3163 C15
- 3167 J29
- 3170 N18
- 3171 F29
- 3172 N17
- 3173 M16
- 3174 M16
- 3175 N17
- 3176 F27
- 3177x O18
- 3182 E22
- 3184 E22
- 3186 J14
- 3188 H25
- 3189 E29
- 3190 E29
- 3191 E29
- 3192 E29
- 3193 M18
- 3194 G31
- 3195 H31
- 3197 H31
- 3206 I6
- 3222x P3
- 3223x N4
- 3224 M14
- 3226x N14
- 3228x O14
- 3231 C7
- 3233 M2
- 3235 H15
- 3238 N9
- 3240 C31
- 3241x O11
- 3242 N11
- 3243x N10
- 3244 M9
- 3245x N4
- 3248 I10
- 5105x P2
- 5106x O3
- 5106 I7
- 5120 J8
- 5122x O10
- 5123 N10
- 5125 I9
- 5140 A6
- 5142 A8
- 5143 D7
- 5144 D9
- 5145 C10
- 5170 G25
- 5105 M12
- 6105 N5
- 6109 J7
- 6121 E21
- 6122 E21
- 6123 E21
- 6124 K8
- 6140 I9
- 6154 D18
- 6174 I29
- 7102x P4
- 7104x N5
- 7105 I7
- 7120 L20
- 7121x O8
- 7122x O13
- 7128x N15
- 7140 E5
- 7168 J17
- 7170 O17
- 7171 O17
- 7172 H16
- 7172 D20
- 7172 N22
- 7172 N20
- 7172 O22
- 7173 H24
- 7178x O18
- 9105 I9
- 9134 I6
- 9190 B12
- 9191 C13
- 9197 C3
- 9199 J6
- 1001 C2
- 1002 D2
- 1005 O4
- 1007 D6
- 1008 D6
- 1009 I6
- 1010 H10

EC04VA LAYOUT (Not For /22)

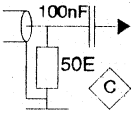
1101 A 1	1156 E 1	2100 A 1	2135 B 4	2164 E 2	2191 A 6	3143 D 3	3174 B 5	3198 D 6	5122 B 6	5170 C 6	6140 C 4	7157 E 4	9110 E 5	9123 C 5	9135 D 1
1102 B 1	1170 E 6	2104 C 2	2141 D 2	2170 B 6	3105 A 2	3148 C 3	3177 A 6	3206 B 2	5123 B 5	5180 E 3	6154 C 4	7175 D 5	9111 E 5	9124 E 1	9136 D 1
1103 D 1	1172 E 6	2106 B 4	2142 C 4	2172 B 6	3112 C 5	3151 D 2	3181 D 5	5101 A 2	5124 B 5	5181 E 3	6170 C 5	9100 E 6	9112 E 4	9125 B 2	9140 C 2
1104 B 1	1173 E 5	2113 A 3	2143 C 4	2173 C 6	3115 B 2	3154 D 3	3189 D 6	5102 A 3	5125 B 4	6100 C 1	6174 D 5	9101 E 5	9113 A 5	9126 A 4	9190 D 3
1105 D 1		2115 B 2	2144 C 4	2174 D 2	3119 B 4	3155 D 3	3190 D 6	5103 A 3	5140 D 2	6101 A 2	6180 D 2	9102 A 5	9115 C 5	9127 A 2	9191 D 3
1110 A 1		2118 A 1	2150 C 2	2175 D 2	3120 B 3	3156 C 5	3191 D 6	5104 A 3	5142 D 2	6106 B 3	6181 D 2	9103 C 6	9116 C 5	9128 D 4	9197 C 1
1111 D 2		2119 A 2	2151 C 2	2177 C 6	3124 A 6	3162 E 4	3192 D 6	5105 A 4	5143 C 2	6107 B 3	6182 E 3	9104 E 5	9117 A 6	9129 C 5	9198 A 2
1112 D 5		2124 B 5	2152 D 3	2178 C 5	3126 A 6	3163 E 4	3193 D 6	5106 A 4	5144 C 2	6120 D 6	7101 B 3	9105 B 4	9118 A 2	9130 E 5	9199 A 3
1152 E 5		2129 B 6	2153 D 4	2179 C 5	3127 A 6	3164 D 4	3194 D 5	5107 A 3	5145 D 3	6121 D 5	7105 B 2	9106 C 5	9119 B 5	9131 E 6	o for AM-version only
1153 E 5		2130 B 5	2160 E 3	2184 D 5	3130 B 6	3165 D 4	3195 D 5	5108 A 2	5146 D 2	6122 D 5	7120 B 4	9107 B 5	9120 B 2	9132 C 3	x for LW-version only
1154 E 4		2131 E 3	2161 D 3	2189 E 3	3132 B 6	3170 C 6	3196 D 4	5109 B 2	5150 D 3	6123 D 6	7127 A 5	9108 D 4	9121 A 2	9133 D 1	y for USA version only
1155 E 2		2134 C 6	2162 D 2	2190 A 2	3141 C 3	3173 B 6	3197 D 5	5120 B 3	5151 C 3	6125 B 5	7156 D 4	9109 E 5	9122 B 4	9134 B 2	z not for all versions

2101 A 2	2122 B 3	2149 D 2	2185 B 3	3109x A 5	3133 A 5	3157 B 2	3180 D 5	3212 C 5	3233 A 4	3248 C 3	7128x A 4	7178 C 6
2102 A 4	2123 B 4	2154 C 3	2186 D 6	3110 C 4	3134 A 5	3158x A 4	3182 C 4	3213 D 5	3234 A 2	6103 A 2	7129 A 5	7179x A 6
2103 C 2	2125x A 6	2155 C 3	2187 D 4	3111 D 3	3135 A 6	3159 C 4	3183 D 5	3214 E 3	3235 C 4	6105 B 4	7140 C 2	7180 D 2
2105 B 3	2126x A 3	2158 D 3	2188 E 4	3113 B 2	3136 E 2	3160 D 4	3184 D 6	3215 E 3	3236x A 5	6109 B 2	7154 D 3	
2107 B 2	2128 A 5	2159 D 3	2192 E 4	3114 B 3	3137 D 2	3161 D 3	3185 B 6	3216 E 4	3237 B 5	6110 B 4	7155 D 3	
2108 A 3	2132 B 4	2163 D 2	2193 C 4	3116x A 3	3138 D 2	3166 E 5	3186 C 4	3221 A 4	3238x A 5	6124 B 3	7167 C 4	
2109 B 4	2133x A 4	2165 E 2	2194 C 5	3117 A 3	3139 D 2	3167 D 5	3187 C 4	3222x A 4	3239 D 6	7100 B 2	7168 C 6	
2110x A 4	2136 B 5	2167 C 3	3100 B 2	3118 A 5	3140 D 2	3168 D 4	3188 C 6	3223x A 3	3240 D 5	7102x A 3	7169 C 6	
2111 B 3	2137 B 5	2168 C 3	3101 B 3	3121 B 4	3142 C 4	3169 D 4	3199 D 4	3224 B 4	3241x A 6	7103 C 4	7170 B 6	
2112 B 4	2138x B 4	2169 C 4	3102 B 3	3122 B 4	3144 C 5	3171 D 6	3200 C 6	3225 B 4	3242 B 5	7104x A 3	7171 B 6	
2114x A 3	2139x A 4	2171 B 6	3103 C 4	3123 C 5	3145 C 4	3172 B 6	3202 D 3	3226x A 4	3243x A 5	7121x A 6	7172 C 5	
2116 B 2	2145x A 4	2180 C 6	3104 B 3	3125x A 5	3147 C 4	3175 B 6	3203 D 3	3228 C 5	3244 A 5	7122 A 5	7173 C 6	
2117 A 4	2146x A 3	2181 C 6	3106 B 4	3128 B 4	3149 C 3	3176 E 6	3204 D 3	3229x A 4	3245x A 3	7123x B 6	7174 D 5	
2120 B 3	2147 D 3	2182 D 4	3107x A 5	3129x B 6	3152 C 1	3178 C 6	3205 D 3	3231 C 2	3246 B 2	7124 B 5	7176 D 4	
2121 B 2	2148 D 2	2183 C 6	3108 B 2	3131 B 5	3153 B 5	3179 C 6	3211 B 6	3232 C 4	3247 B 3	7125 B 5	7177 D 4	

o for AM-version only
x for LW-version only
y for USA version only
z not for all versions



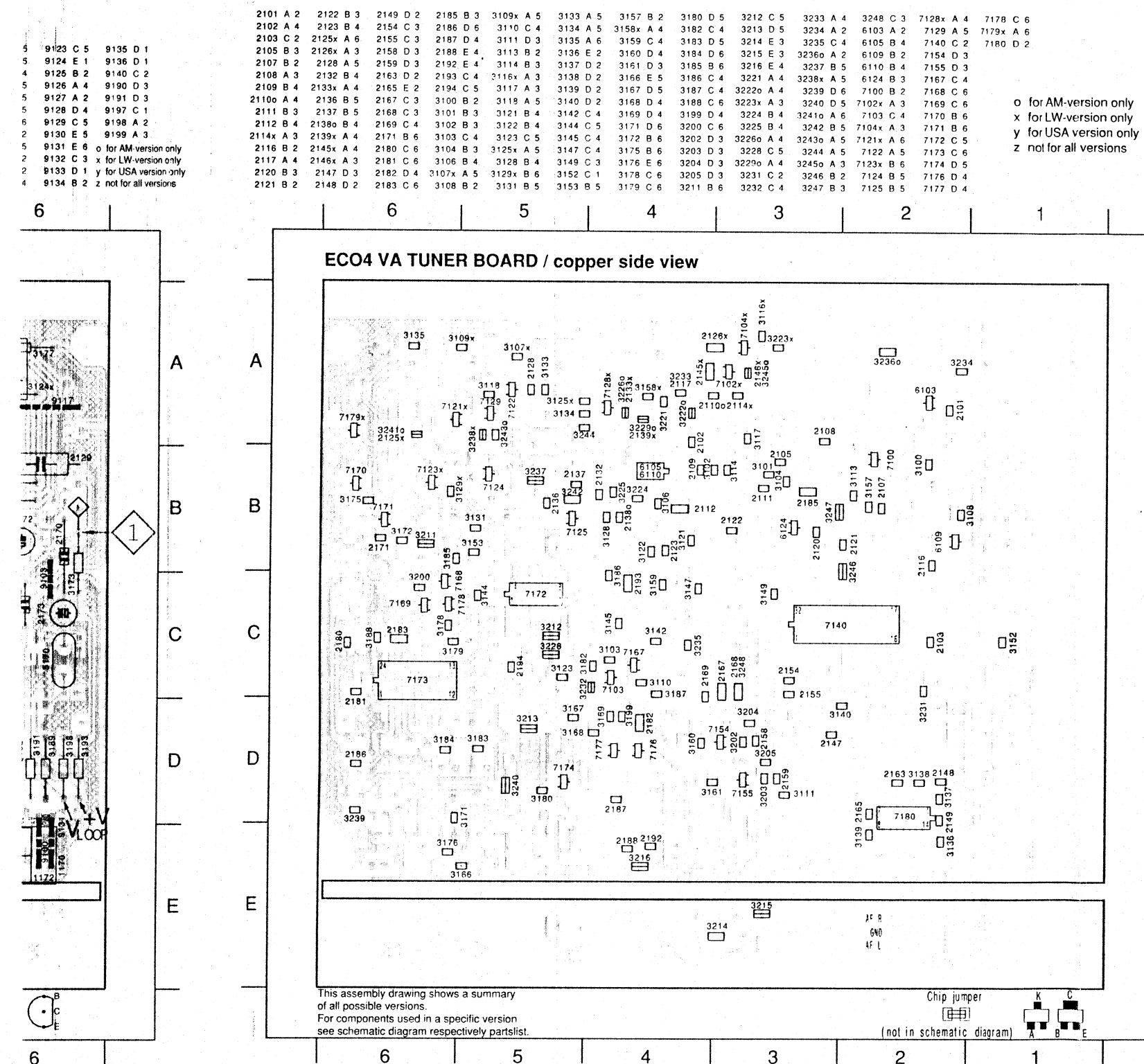
TUNER Adjustment table (ECO4 VA FM/MW- and FM/MW/LW - versions with AM-ferrite antenna)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT * 1)						
FM 87.5 - 108MHz			108 MHz	5120	1	8V ± 0.2V
			87.5MHz	check		4.1V ± 0.5V
FM /14 East Europe 65.81 - 108MHz			108 MHz	5120		8V ± 0.2V
			65.81 MHz	check		0.8V ± 0.4V
MW 2-band version, 10kHz grid 530 - 1710kHz			1710kHz	5123		9V±0.1V (7.2±1.2V) ¹⁾
			530kHz	check		1V±0.4V (1.1±0.5V) ¹⁾
LW 153 - 279kHz			279kHz	5122		8V±0.2V (7.5±1.5V) ¹⁾
			153kHz	check		1V±0.4V (1.1±0.5V) ¹⁾
MW 3-band version 522 - 1611kHz			1611kHz	5123		8V±0.1V (7.2±1.2V) ¹⁾
			522kHz	check		1V±0.4V (1.1±0.5V) ¹⁾
FM - RF						
FM	108MHz	A mod=1kHz Δf=22.5kHz	108MHz	2115	3	MAX ↕
	87.5MHz		87.5MHz	5109		
FM /14 East Europe	108MHz		108MHz	2115		
	65.81MHz		65.81MHz	5109		
VCO						
FM	98 MHz, 1mV continuous wave	A	98MHz	3148	2	152kHz ± 1kHz
AM - IF						
MW	540kHz Δf = 10kHz as low as possible		540kHz	5142 5140	4	symmetrical and max height
AM - RF						
LW	198kHz	B mod=1kHz 30% AM	198kHz	5122	4	MAX
MW 3-band version	1494kHz		1494kHz	2130		MAX ↕
	549kHz		549kHz	5123		
MW 2-band version, 10kHz grid	1500kHz		1500kHz	2130		
	550kHz		550kHz	5123		

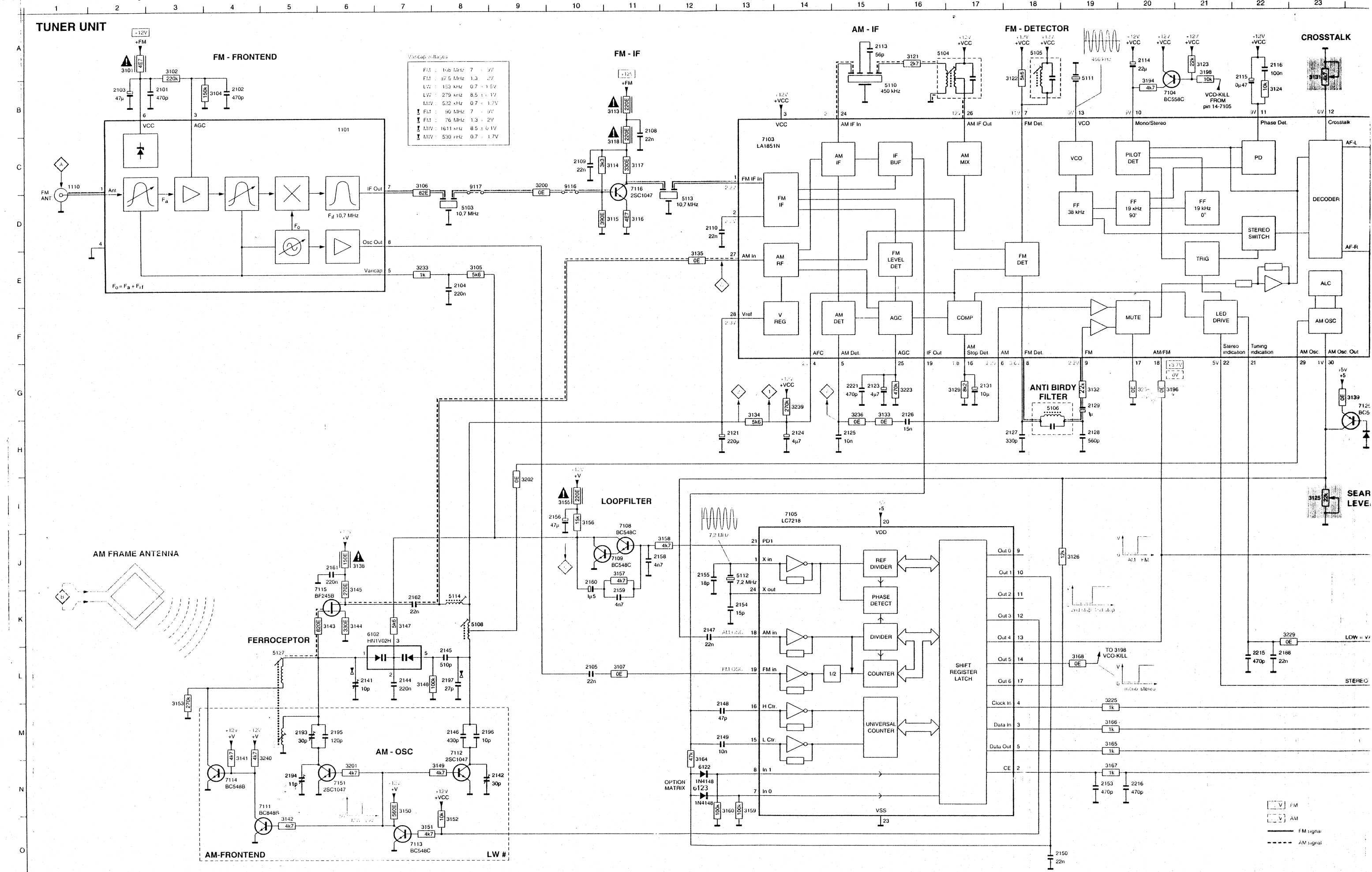
* Use Service Test Program. By selecting the TUNER TEST, test frequencies will be stored as preset frequ. automatically.

1) Adjustment of AM-RF stage influences the varicap voltage. Therefore check if varicap voltage fulfils value stated within brackets after AM-RF adjustment.

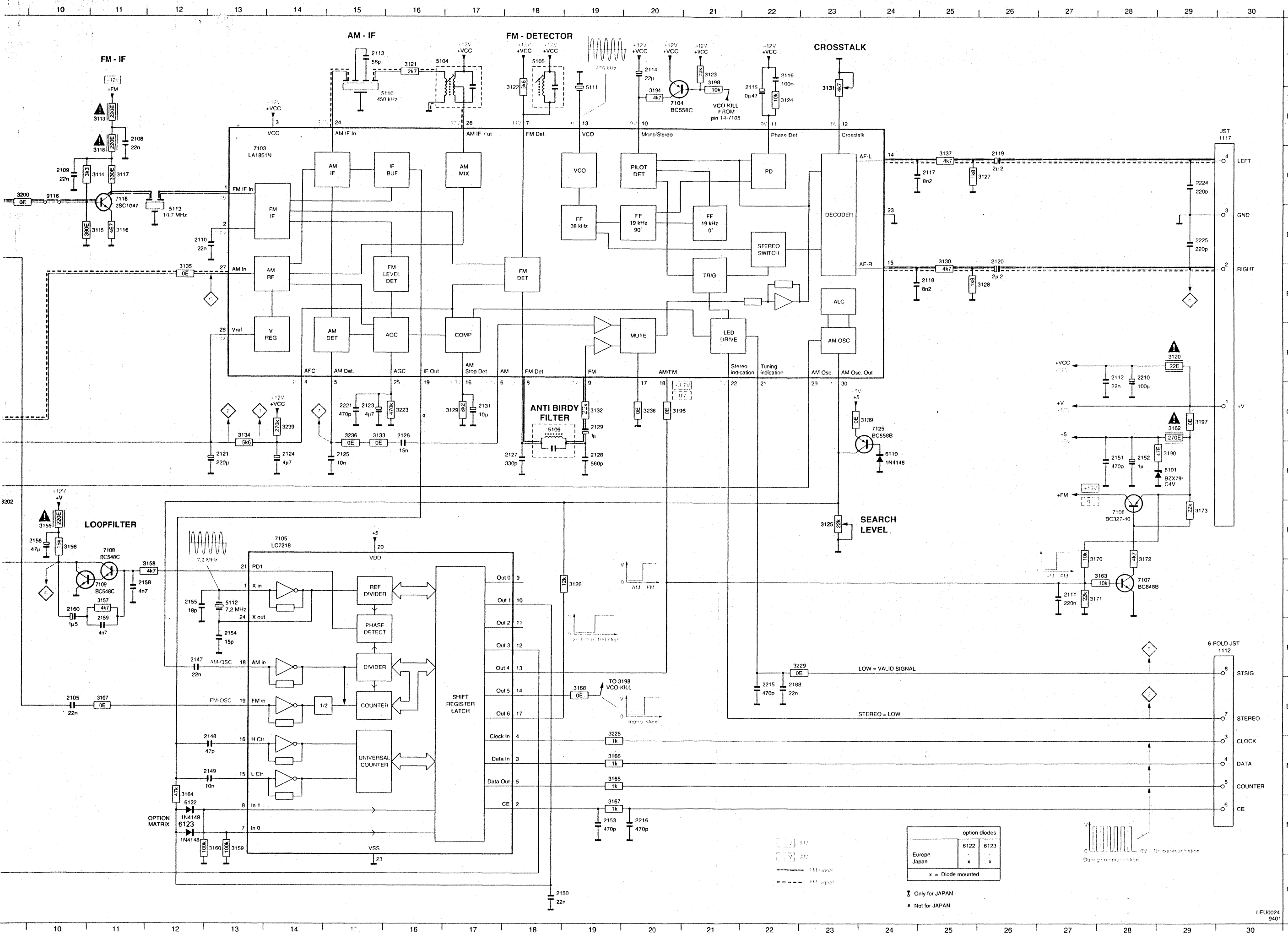
repeat



TUNER 92 CIRCUIT (For /22 only)



3104 217 03800 b1 130 - 01



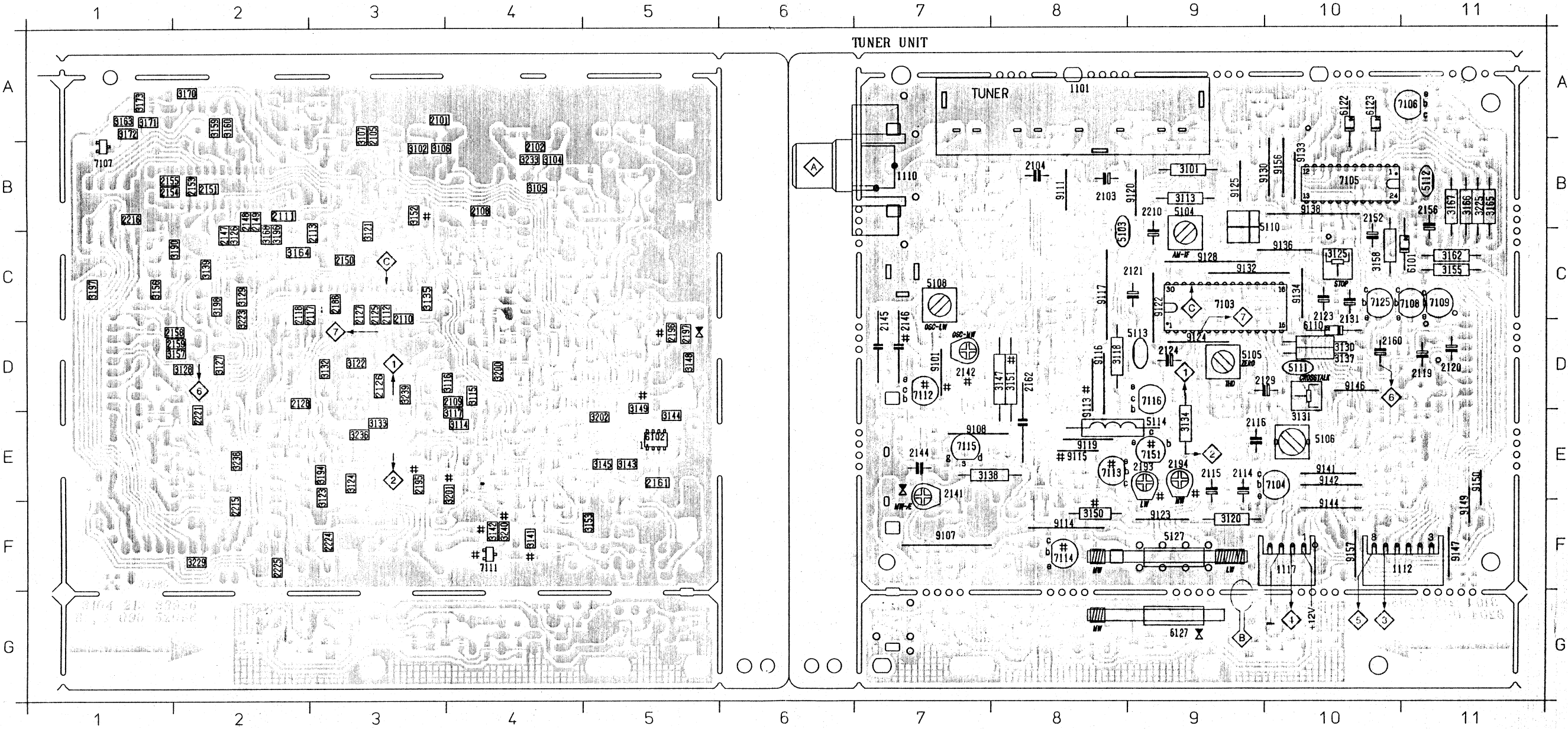
1101	B6	3190	H29
1110	C1	3194	B20
1112	K30	3196	G20
1117	B30	3197	G29
2101	B3	3198	A21
2103	B2	3201	N6
2104	E8	3202	I9
2105	L10	3223	G16
2108	B11	3225	L19
2109	C10	3229	K22
2110	D12	3233	E7
2111	J27	3236	G15
2112	F28	3238	G20
2113	A15	3239	G14
2114	A20	3240	N4
2115	B22	5103	D8
2116	A22	5104	A16
2117	C25	5105	A18
2118	E25	5106	G18
2119	C26	5108	K8
2120	D26	5110	B15
2121	H13	5111	B19
2123	G15	5112	J13
2124	H14	5113	D12
2125	H15	5114	K8
2126	G16	5127	L5
2127	H18	6101	H29
2128	H19	6102	K6
2129	G19	6110	H24
2131	G17	6122	N12
2141	L6	7103	C13
2142	N9	7104	B20
2144	L7	7105	I14
2145	L8	7106	I28
2146	M8	7107	J28
2147	K12	7108	I11
2148	M12	7109	J11
2149	M12	7111	N4
2150	C18	7112	M8
2151	H28	7113	O7
2152	H28	7114	N4
2153	N19	7115	K5
2154	K13	7116	C11
2155	J12	7125	G24
2156	I10	7151	N5
2158	J11	3116	C10
2159	K11	9117	C8
2160	J10		
2161	J6		
2162	K7		
2188	L22		
2193	M5		
2194	N5		
2195	M6		
2196	M8		
2197	L8		
2210	F28		
2215	L22		
2216	N20		
2221	G15		
2225	D29		
3101	A2		
3102	A3		
3104	B4		
3105	E8		
3106	C7		
3107	L11		
3113	B11		
3114	C11		
3115	D11		
3116	D11		
3117	C11		
3118	C11		
3120	F29		
3121	A16		
3122	B18		
3123	A21		
3124	B22		
3125	I23		
3126	J19		
3127	C26		
3128	E26		
3129	G17		
3130	D25		
3131	B23		
3132	G19		
3133	G15		
3134	G13		
3135	E12		
3137	C25		
3138	J6		
3139	G24		
3141	N4		
3142	O5		
3143	K6		
3144	K6		
3145	K6		
3147	K7		
3148	L7		
3149	N7		
3150	N7		
3151	O7		
3152	O8		
3153	M3		
3155	I10		
3156	I10		
3157	J11		
3158	J11		
3159	N13		
3160	N13		
3162	G29		
3163	J27		
3164	N12		
3165	M19		
3166	M19		
3167	N19		
3168	L19		
3170	J27		
3171	J27		
3172	J28		
3173	I29		

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TUNER 92 LAYOUT (For /22 only)

TUNE

1101	A8	2111	B2	2124	D9	2147	C2	2160	D10	2221	E2	3116	D4	3129	C2	3143	E5	3157	D2	3171	A1	3225	B11	5110	C10	7104	E10	7125	C10	9120	B9	9141	E10
1110	B7	2112	C3	2125	C3	2148	B2	2161	E5	2224	F3	3117	E4	3130	D10	3144	E5	3158	C10	3172	A1	3229	F2	5111	D10	7105	B10	7151	E9	9122	C9	9142	E10
1112	F11	2113	C3	2126	C3	2149	B2	2162	D8	2225	F2	3118	D8	3131	E10	3145	E5	3159	A2	3173	A1	3233	B4	5112	B11	7106	A11	9101	D7	9123	F9	9144	F10
1117	F10	2114	E9	2127	C3	2150	C3	2188	C3	3101	B9	3120	F9	3132	D3	3147	D8	3160	A2	3190	C2	3236	E3	5113	D9	7107	B1	9107	F7	9124	D9	9146	D10
2101	A3	2115	E9	2128	D2	2151	B2	2193	E9	3102	B3	3121	C3	3133	E3	3148	D5	3162	C11	3194	E3	3238	E2	5114	E9	7108	C11	9108	E7	9125	B9	9147	F11
2102	B4	2116	E9	2129	D10	2152	B10	2194	E9	3104	B4	3122	D3	3134	E9	3149	E5	3163	A1	3196	C2	3239	D3	5117	F9	7109	C11	9111	B8	9128	C9	9149	F11
2103	B8	2117	C3	2131	D10	2153	B2	2195	E3	3105	B4	3123	E3	3135	C3	3150	F8	3164	C2	3197	C1	3240	F4	6101	C11	7111	F4	9113	D8	9130	B10	9150	E11
2104	B8	2118	C2	2141	E7	2154	B1	2196	D5	3106	B3	3124	E3	3137	D10	3151	D8	3165	B11	3198	C2	5103	C8	6102	E5	7112	D7	9114	F8	9132	C9	9156	B10
2105	A3	2119	D11	2142	D7	2155	B1	2197	D5	3107	A3	3125	C10	3138	E7	3152	B3	3166	B11	3200	D4	5104	B9	6110	D10	7113	E8	9115	E8	9133	B10	9157	F10
2108	B4	2120	D11	2144	E7	2156	B11	2210	B9	3113	B9	3126	C2	3139	C2	3153	F5	3167	B11	3201	F4	5105	D9	6112	A10	7114	F8	9116	D8	9134	C10		
2109	D4	2121	C9	2145	D7	2158	D2	2215	F2	3114	F4	3127	D2	3141	F4	3155	C11	3168	C2	3202	E5	5106	E10	6123	A10	7115	E7	9117	C8	9136	C10		
2110	D3	2123	D10	2146	D7	2159	D2	2216	B1	3115	D4	3128	D2	3142	F4	3156	C1	3170	A2	3223	C2	5108	C7	7103	C9	7116	D9	9119	E8	9138	B10		



NOT FOR JAPAN
X ONLY FOR JAPAN

NOT FOR JAPAN
X ONLY FOR JAPAN

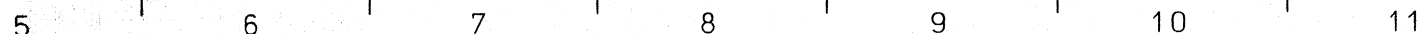
3104-217-03800 . 6

W
VARIC
FM 87.5 - (50)
LW 153 - (3)
MW 522 - (9)
FM IF
FM
STERE
FM
SEAR
FM
AM - II
MW
AM - F
LW
MW

* Signal
(..) = tu



5 6 7 8 9 10 11

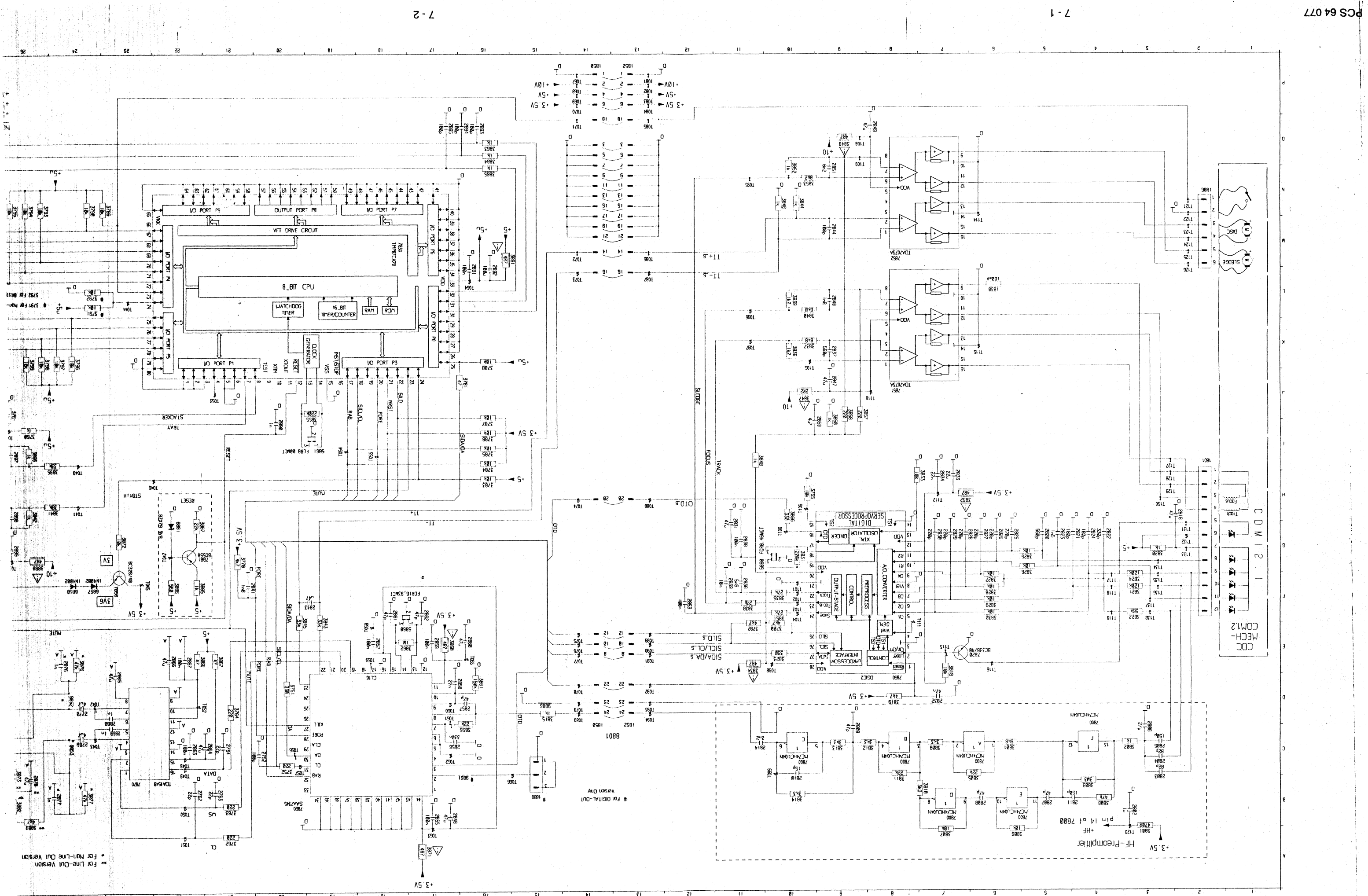


3104-217-03800 . 6

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter	
VARICAP ALIGNMENT							
FM 87.5 - 108MHz (50)			108 MHz	check	6	7.....9V	
			87.5MHz	check		1.3.....2V	
LW 153 - 279kHz (3)			279kHz	5108		8.5V ± 0.1V	
			153kHz	check		0.7.... 1.5V	
MW 522 - 1611kHz (9)			1611kHz	2142		8,5V ± 0.1V	
			522kHz	check		0.7.....1.7V	
FM IF							
FM	98 MHz 1mV	A	98MHz	5105	1	0V ± 20mV	
	mod = 1kHz Δf = 75kHz				2		
STEREO CROSSTALK							
FM	98 MHz 1mV 90% L + 9% pilot	A	98MHz	check	3	low < 1V	
				3131	4	Right channel min.	
SEARCH SENSITIVITY							
FM	98 MHz 12μV mod = 1kHz Δf = 75kHz	A	98MHz Sensitivity low "Level"	3125	5	Switches just from High to Low	
AM - IF							
MW	1494kHz Δf = 10kHz low as possible swept signal		1494kHz	5104	7	symmetrical and max height	
AM - RF							
LW	155kHz mod = 1kHz 30 % AM 270kHz	B *	155kHz	5127 LW	7	MAX	
			270kHz	2193			
MW	558kHz mod = 1kHz 30 % AM 1494kHz		558kHz	5127 MW		MAX	
			1494kHz	2194			

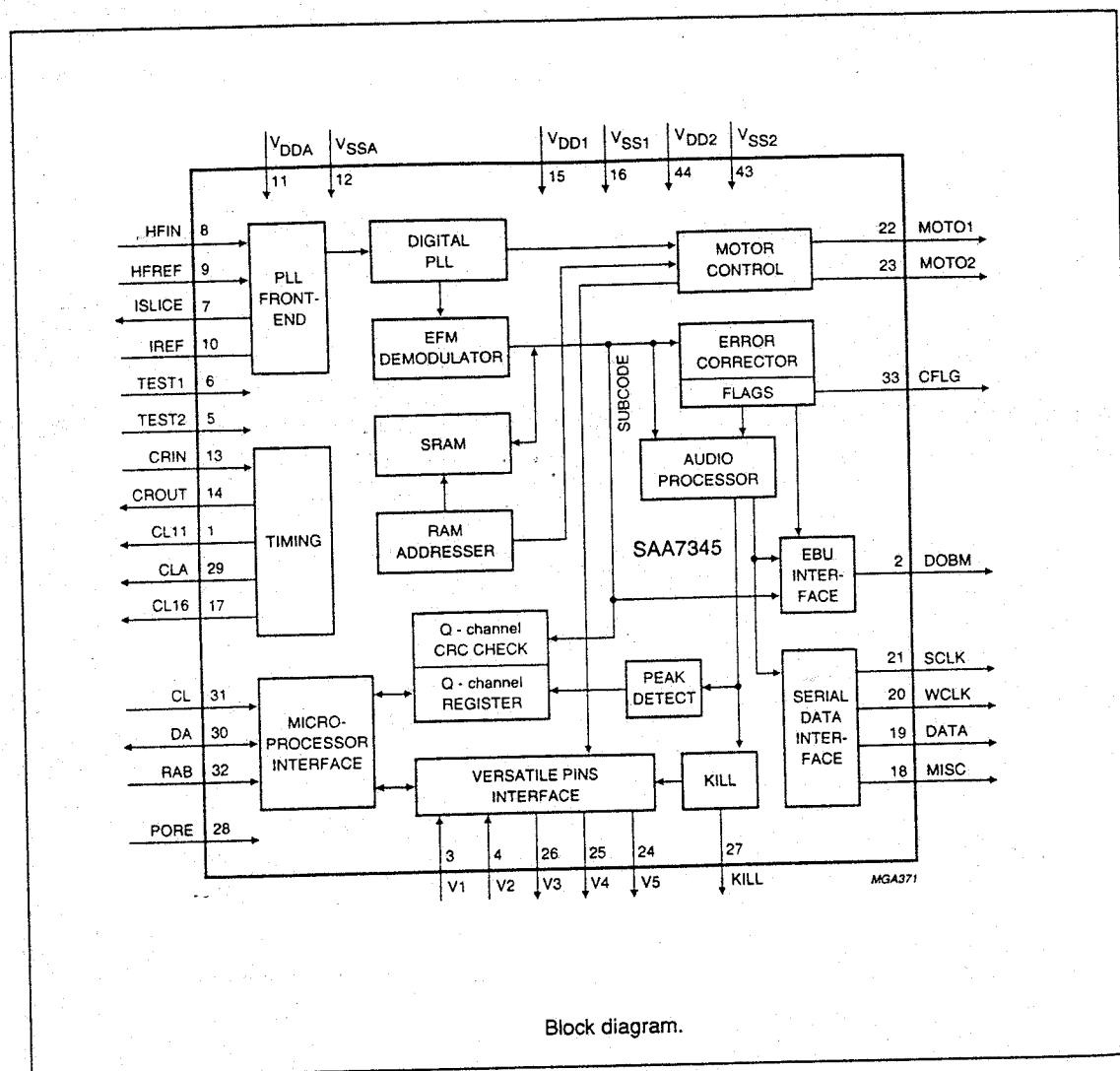
↑
↓
repeat

PCS 64 076



* For Non-Line Out Version

IC 7860 (SAA 7345)

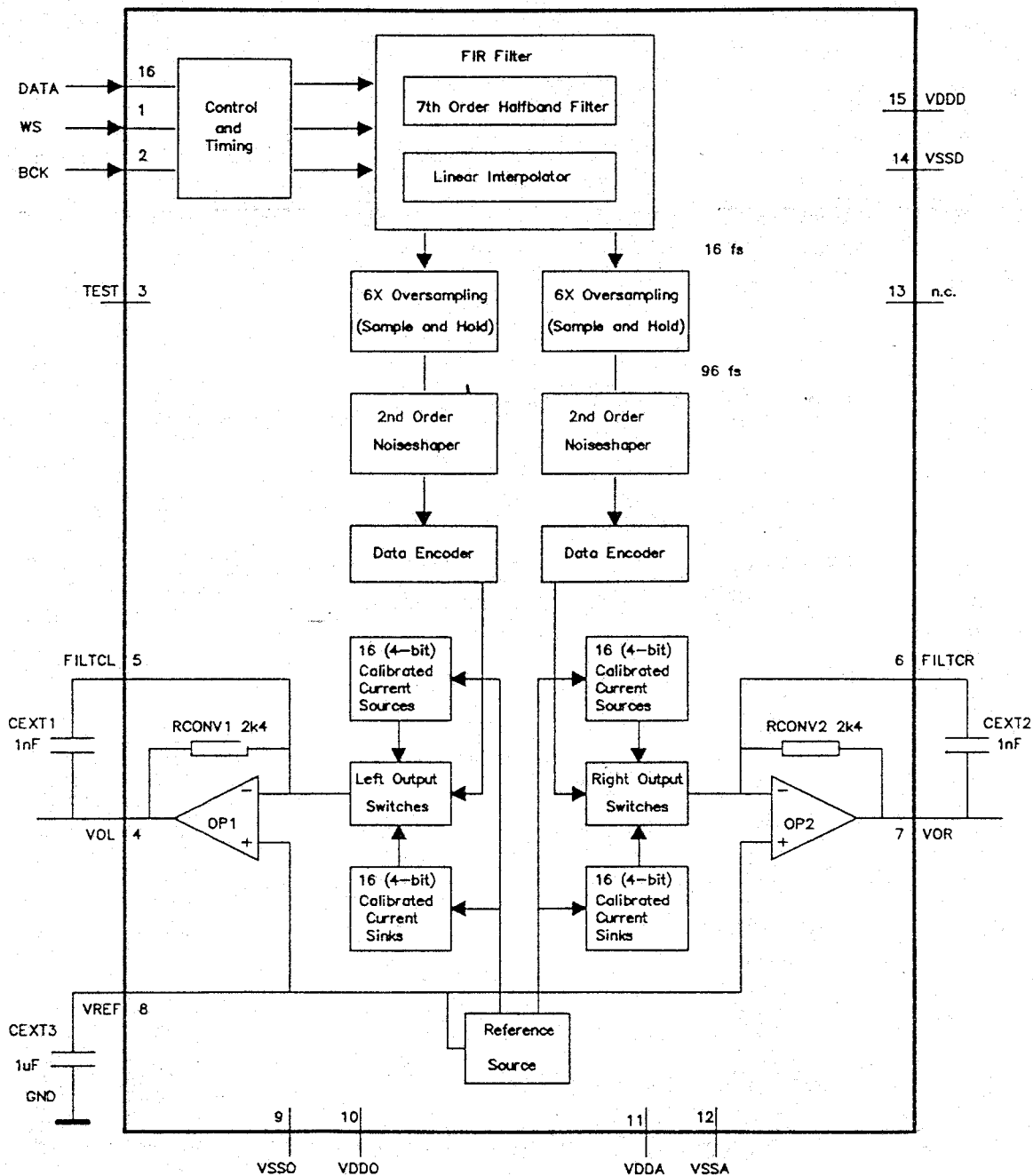


Block diagram.

PINNING OF SAA7345

SYMBOL	PIN	DESCRIPTION	SYMBOL	PIN	DESCRIPTION
CL11	1	11.2896 MHz clock output (3-state)	DATA	19	serial data output (3-state)
DBOM	2	bi-phase mark output (externally buffered; 3-state)	WCLK	20	word clock output (3-state)
V1	3	versatile input pin	SCLK	21	serial bit clock (3-state)
V2	4	versatile input pin	MOTO1	22	motor output 1; versatile (3-state)
TEST2	5	test input; this pin should be tied LOW	MOTO2	23	motor output 2; versatile (3-state)
TEST1	6	test input; this pin should be tied LOW	V5	24	versatile output pin
ISLICE	7	current feedback from data slicer	V4	25	versatile output pin
HFREF	8	comparator common-mode input	V3	26	versatile output pin (open-drain)
HFREF	9	comparator common-mode input	KILL	27	kill output; programmable (open-drain)
IREF	10	reference current pin (nominally V _{DD} /2)	PORE	28	power-on reset enable input (active LOW)
V _{DDA}	11	analog supply	CLA	29	4.2336MHz microprocessor clock output
V _{SSA}	12	analog supply	RAB	32	interface R $\overline{W}$ and acknowledge input
CRIN	13	crystal/resonator input	CFLG	33	correction flag output (open-drain)
CROUT	14	crystal/resonator output	34-42		no internal connection
V _{DD1}	15	digital supply	V _{SS2}	43	digital supply
V _{SS1}	16	digital supply	V _{DD2}	44	digital supply
CL16	17	16.9344MHz system clock output			
MISC	18	general purpose DAC output (3-state)			

IC 7870 (TDA 1549)



Block diagram

1

2

3

4

5

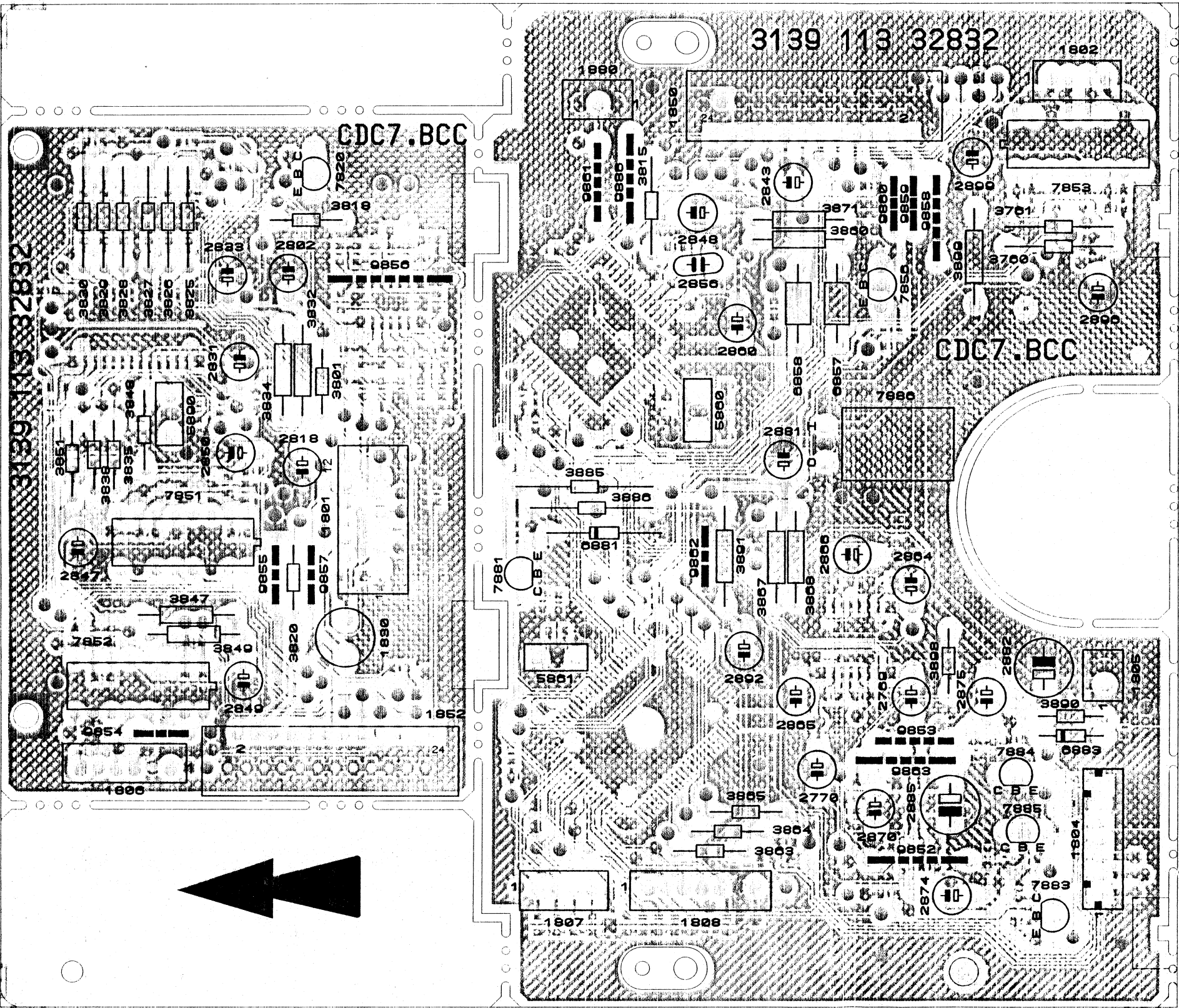
module-cdc.bccpanel-p2-940421-1

A

B

C

D



1

2

3

4

5

1801 C 2	3864 D 3
1802 A 5	3865 D 3
1804 D 5	3867 C 3
1805 C 5	3868 C 3
1806 D 1	3871 A 4
1807 D 3	3885 B 3
1808 D 3	3886 C 3
1830 C 2	3890 C 5
1850 A 4	3891 C 3
1852 C 2	3898 C 4
1880 A 3	3899 A 4
2769 C 4	5860 B 3
2770 D 4	5861 C 3
2802 B 1	5890 B 1
2818 B 2	6857 B 4
2831 B 1	6858 B 3
2833 B 1	6881 C 3
2843 A 3	6883 C 5
2847 C 1	7820 A 2
2848 A 3	7851 C 1
2849 C 1	7852 C 1
2850 B 1	7853 A 5
2856 B 3	7856 B 4
2860 B 3	7881 C 2
2864 C 4	7883 D 5
2865 C 3	7884 D 4
2866 C 4	7885 D 4
2870 D 4	7886 B 4
2874 D 4	9852 D 4
2875 C 4	9853 C 4
2881 B 3	9854 C 1
2882 C 4	9855 C 1
2885 D 4	9856 B 2
2892 C 3	9857 C 2
2896 B 5	9858 A 4
2899 A 4	9859 A 4
3760 A 5	9860 A 4
3761 A 5	9861 A 3
3801 B 2	9862 C 3
3815 A 3	9863 D 4
3818 A 2	9886 A 3
3820 C 1	
3825 A 1	
3826 A 1	
3827 A 1	
3828 A 1	
3829 A 1	
3830 A 1	
3832 B 2	
3834 B 1	
3835 B 1	
3838 B 1	
3847 C 1	
3848 B 1	
3849 C 1	
3851 B 1	
3860 A 4	
3863 D 3	

A

B

C

D

A

B

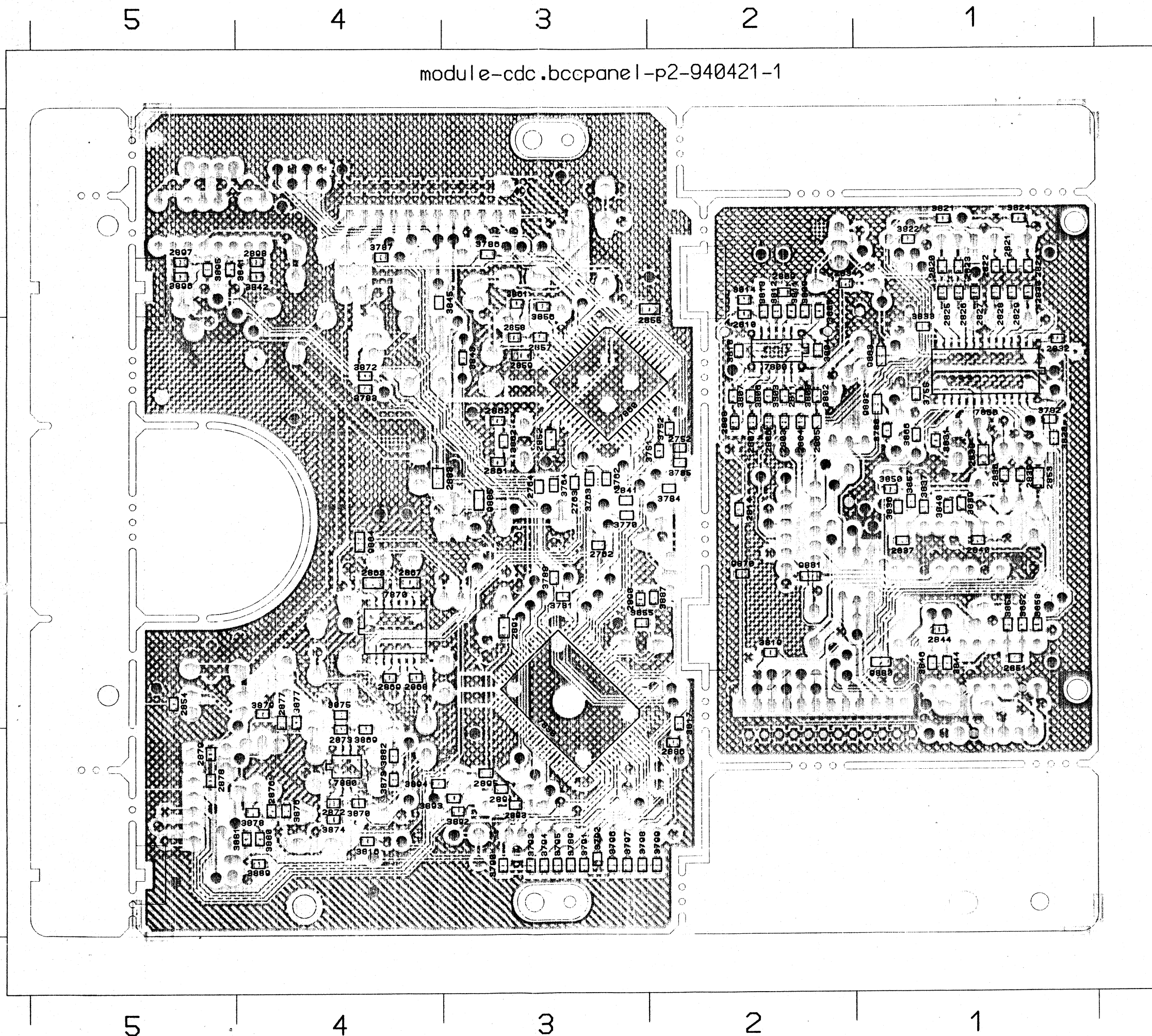
C

D

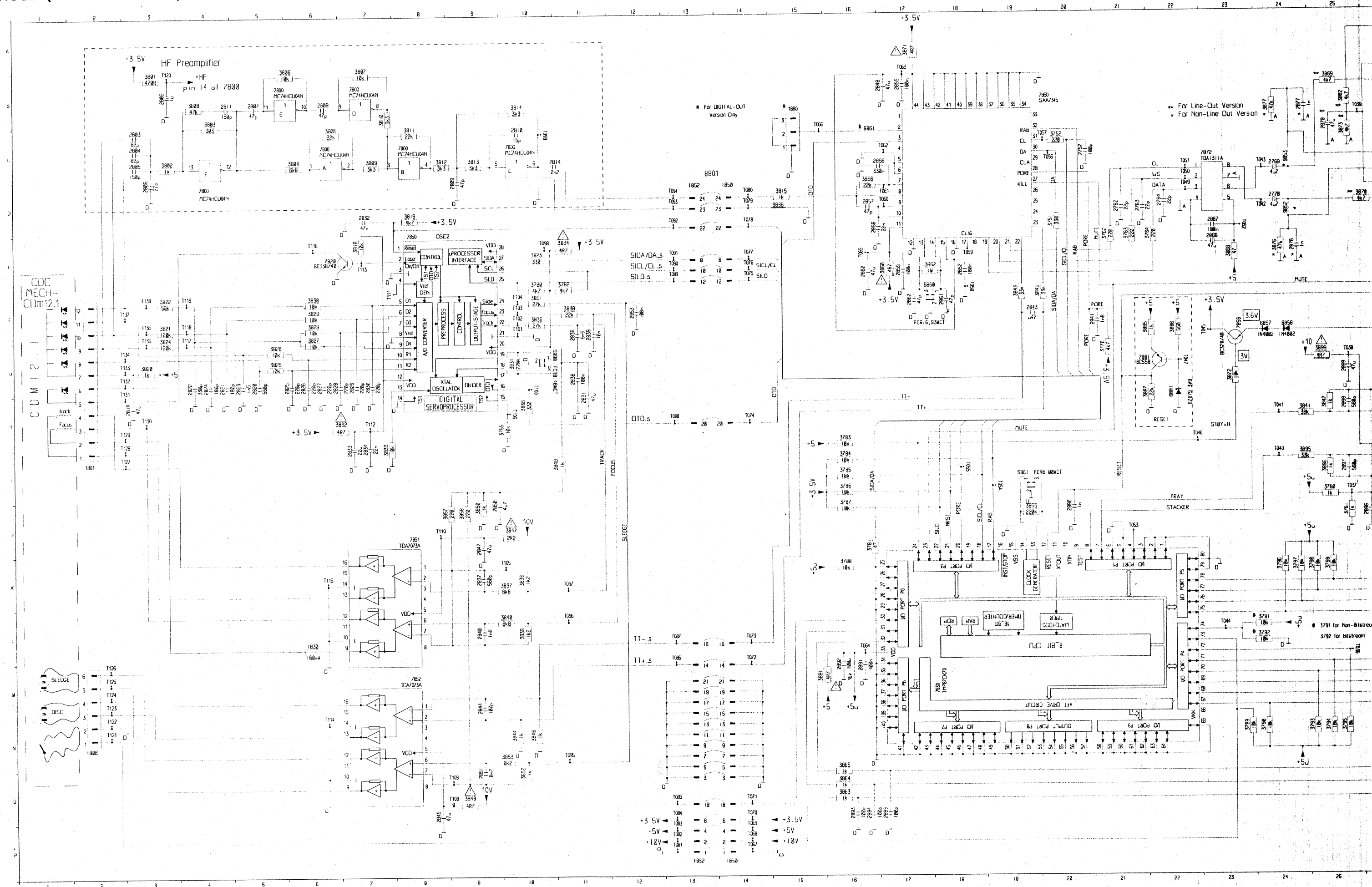
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5

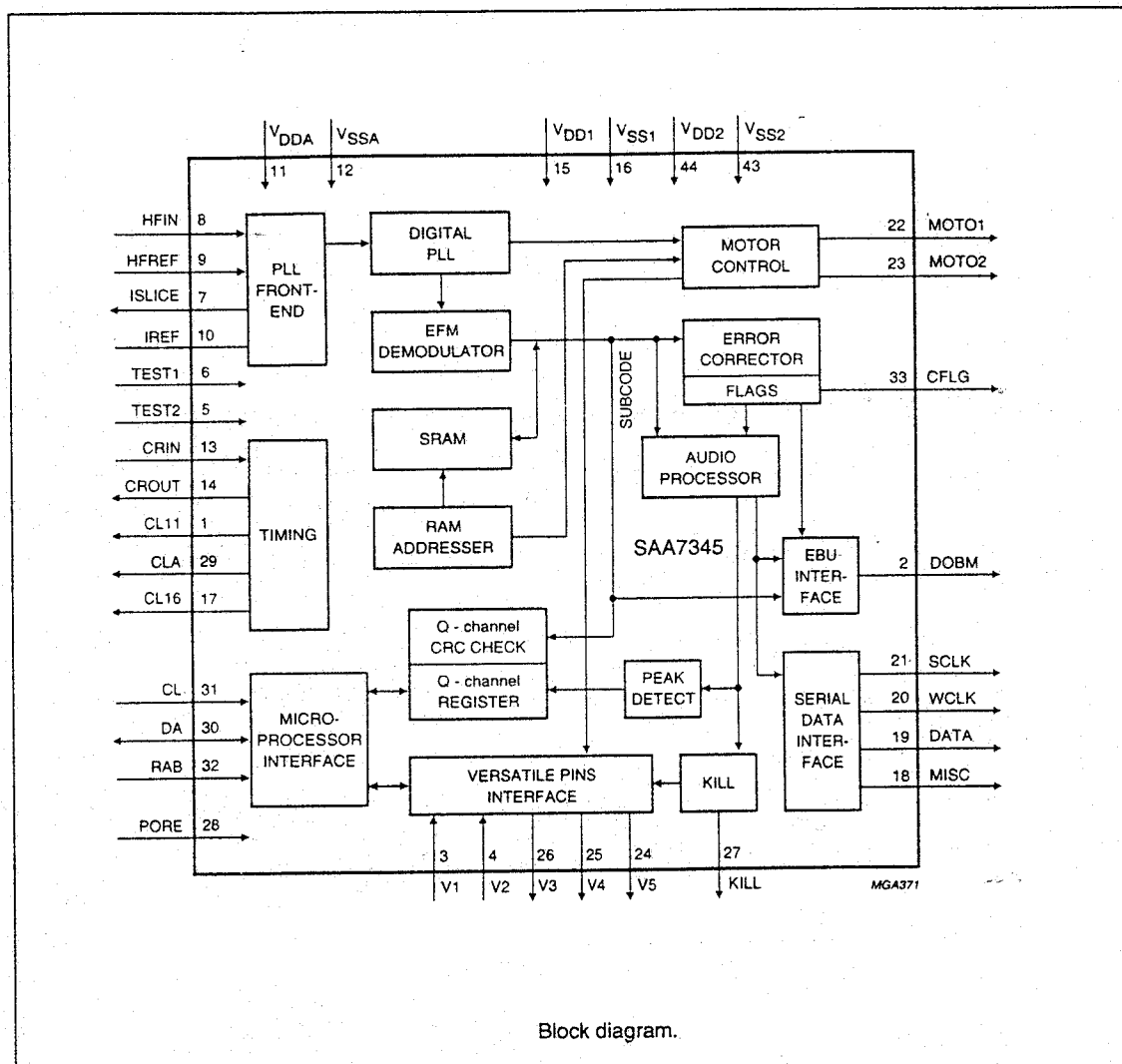
		1801 C 2	3864 D 3
		1802 A 5	3865 D 3
		1804 D 5	3867 C 3
		1805 C 5	3868 C 3
		1806 D 1	3871 A 4
		1807 D 3	3885 B 3
		1808 D 3	3886 C 3
		1830 C 2	3890 C 5
		1850 A 4	3891 C 3
		1852 C 2	3898 C 4
A		1880 A 3	3899 A 4
		2769 C 4	5860 B 3
		2770 D 4	5861 C 3
		2802 B 1	5890 B 1
		2818 B 2	6857 B 4
		2831 B 1	6858 B 3
		2833 B 1	6881 C 3
		2843 A 3	6883 C 5
		2847 C 1	7820 A 2
		2848 A 3	7851 C 1
		2849 C 1	7852 C 1
		2850 B 1	7853 A 5
B		2856 B 3	7856 B 4
		2860 B 3	7881 C 2
		2864 C 4	7883 D 5
		2865 C 3	7884 D 4
		2866 C 4	7885 D 4
		2870 D 4	7886 B 4
		2874 D 4	9852 D 4
		2875 C 4	9853 C 4
		2881 B 3	9854 C 1
		2882 C 4	9855 C 1
		2885 D 4	9856 B 2
		2892 C 3	9857 C 2
		2896 B 5	9858 A 4
C		2899 A 4	9859 A 4
		3760 A 5	9860 A 4
		3761 A 5	9861 A 3
		3801 B 2	9862 C 3
		3815 A 3	9863 D 4
		3818 A 2	9886 A 3
		3820 C 1	
		3825 A 1	
		3826 A 1	
		3827 A 1	
		3828 A 1	
		3829 A 1	
D		3830 A 1	
		3832 B 2	
		3834 B 1	
		3835 B 1	
		3838 B 1	
		3847 C 1	
		3848 B 1	
		3849 C 1	
		3851 B 1	
		3860 A 4	
		3863 D 3	



	2752 B2	3789 D3
	2762 C3	3790 D3
	2763 B3	3791 D3
	2764 B3	3793 D3
	2803 B2	3794 D3
	2804 B2	3795 D3
	2805 B2	3796 D3
	2806 B2	3797 D3
	2807 B2	3798 D3
	2808 B2	3799 D2
	2809 A2	3802 B2
	2810 B2	3803 B2
	2811 B2	3804 B2
	2814 B2	3805 A2
A	2820 A1	3806 B2
	2821 A1	3807 B2
	2822 A1	3808 B2
	2823 A1	3809 A2
	2824 A1	3810 B2
	2825 A1	3811 A2
	2826 A1	3812 A2
	2827 A1	3813 A2
	2828 A1	3814 A2
	2829 A1	3816 D4
	2830 A1	3817 C2
	2832 B1	3819 C2
	2834 A2	3821 A1
	2836 B1	3822 A1
	2837 C1	3823 B1
	2838 B1	3824 A1
	2839 B1	3831 B1
	2840 C1	3833 B1
	2841 B3	3836 B1
	2844 C1	3837 B1
	2851 C1	3839 B1
	2852 B3	3840 B1
	2853 B1	3841 A5
	2854 C5	3842 A4
	2855 A2	3843 B3
	2857 B3	3844 C1
	2858 B3	3845 A4
	2859 B3	3846 C1
	2861 B3	3850 B1
	2862 B3	3852 C1
	2863 C4	3853 C1
	2867 C4	3855 C3
	2868 C4	3856 A3
	2869 C4	3857 B1
	2872 D4	3858 C1
	2876 D4	3861 A3
	2877 C4	3862 B3
	2878 D5	3866 B1
	2879 D5	3872 B4
	2883 B4	3876 D4
	2886 D2	3877 C4
	2890 C3	3878 D4
	2891 C3	3879 C4
	2893 D3	3880 D4
	2894 D3	3881 D4
	2895 D3	3887 C2
	2897 A5	3889 D4
	2898 A4	3892 D3
	3751 B2	3893 D3
	3752 B2	3894 D4
	3755 B1	3895 A5
	3762 B3	3896 A5
	3763 B3	7830 C3
	3764 B3	7850 B1
	3770 B3	7860 B3
	3780 B1	7870 C4
	3781 C3	7880 D4
	3782 B1	9870 C2
	3783 B4	9880 C1
	3784 B2	9881 C2
	3785 B2	9882 B1
	3786 A3	9883 B1
	3787 A4	9884 C4
	3788 C3	9885 B3



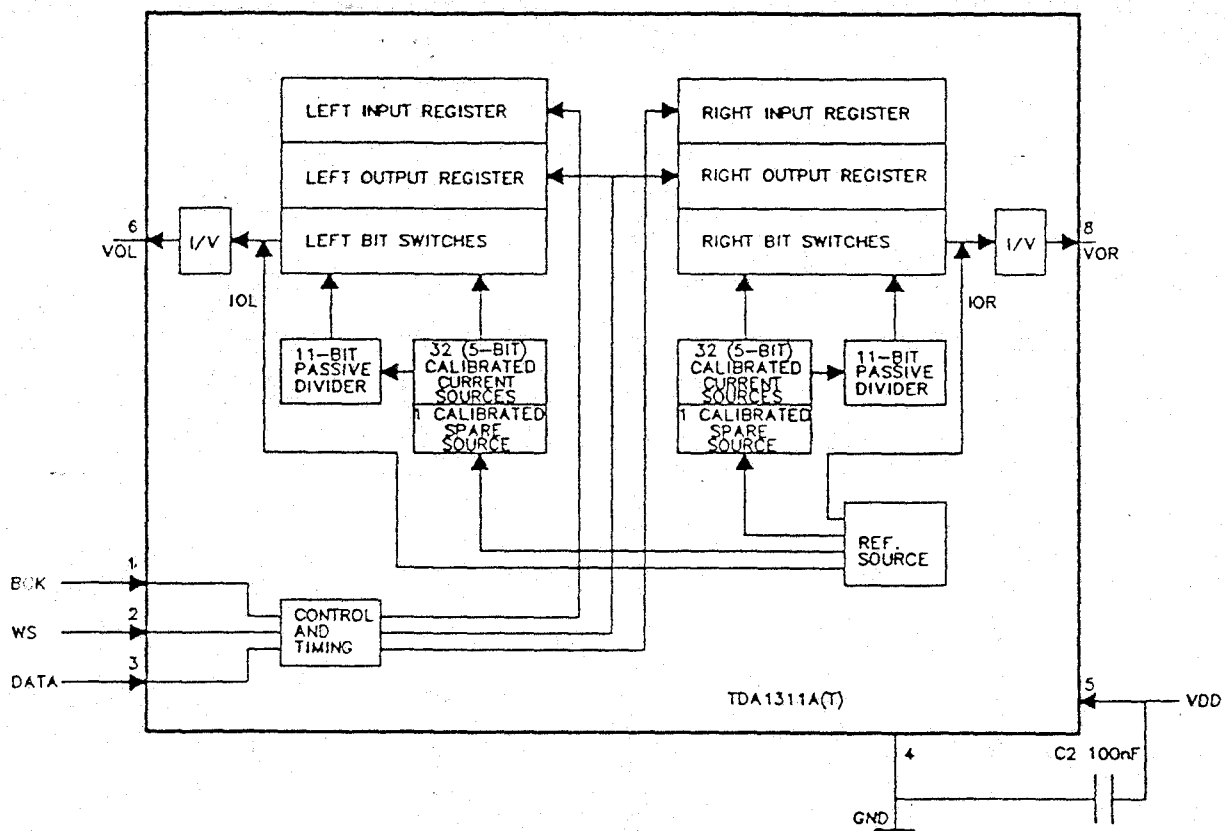
IC 7860 (SAA 7345)



Block diagram.

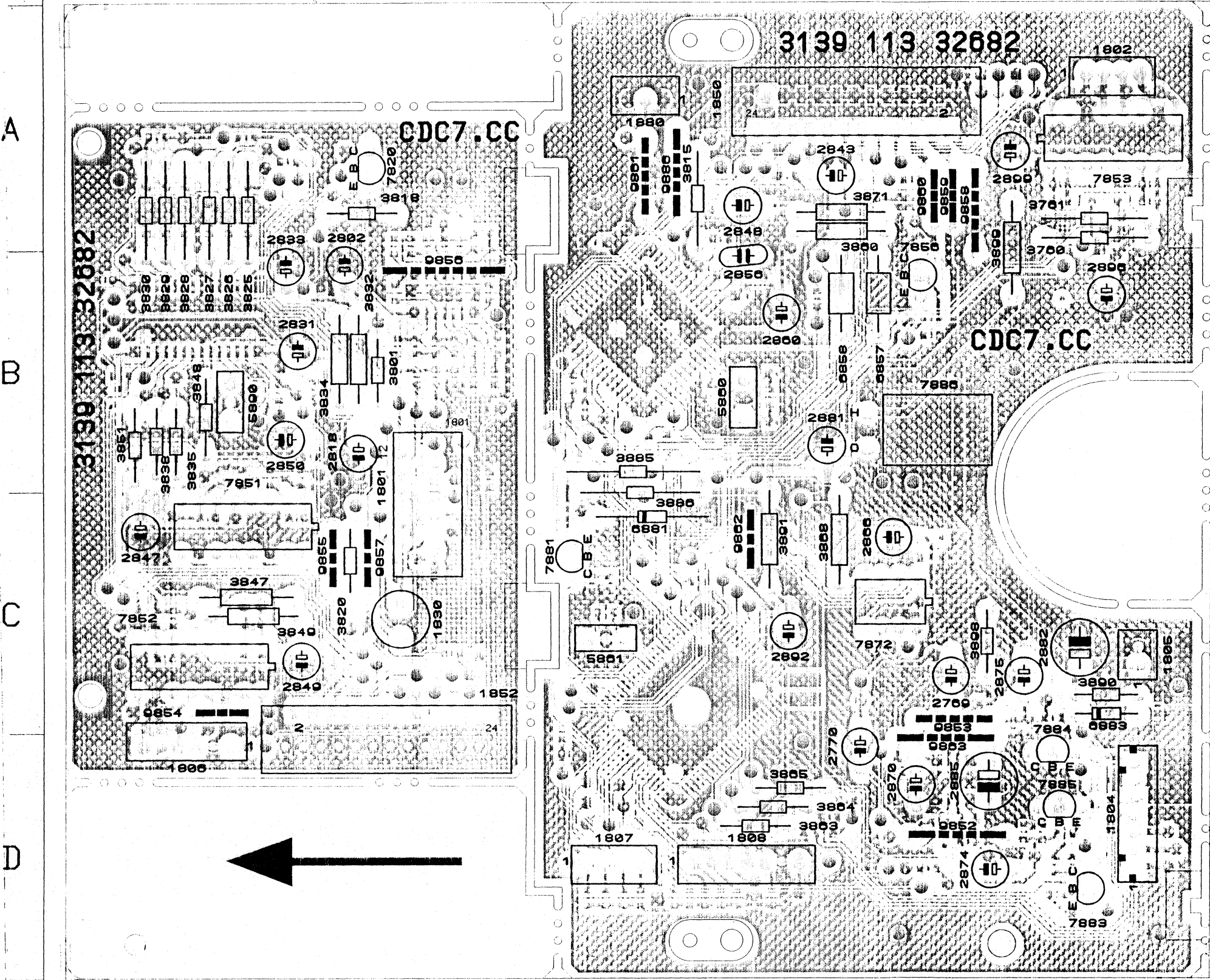
PINNING OF SAA7345

SYMBOL	PIN	DESCRIPTION	SYMBOL	PIN	DESCRIPTION
CL11	1	11.2896 MHz clock output (3-state)	DATA	19	serial data output (3-state)
DBOM	2	bi-phase mark output (externally buffered; 3-state)	WCLK	20	word clock output (3-state)
V1	3	versatile input pin	SCLK	21	serial bit clock (3-state)
V2	4	versatile input pin	MOTO1	22	motor output 1; versatile (3-state)
TEST2	5	test input; this pin should be tied LOW	MOTO2	23	motor output 2; versatile (3-state)
TEST1	6	test input; this pin should be tied LOW	V5	24	versatile output pin
ISLICE	7	current feedback from data slicer	V4	25	versatile output pin
HFIN	8	comparator signal input	V3	26	versatile output pin (open-drain)
HFREF	9	comparator common-mode input	KILL	27	kill output; programmable (open-drain)
IREF	10	reference current pin (nominally V _{DD} /2)	PORE	28	power-on reset enable input (active LOW)
V _{DDA}	11	analog supply	CLA	29	4.2336MHz microprocessor clock output
V _{SSA}	12	analog supply	RAB	32	interface R/W and acknowledge input
CRIN	13	crystal/resonator input	CFLG	33	correction flag output (open-drain)
CROUT	14	crystal/resonator output		34-42	no internal connection
V _{DD1}	15	digital supply	V _{SS2}	43	digital supply
V _{SS1}	16	digital supply	V _{DD2}	44	digital supply
CL16	17	16.9344MHz system clock output			
MISC	18	general purpose DAC output (3-state)			

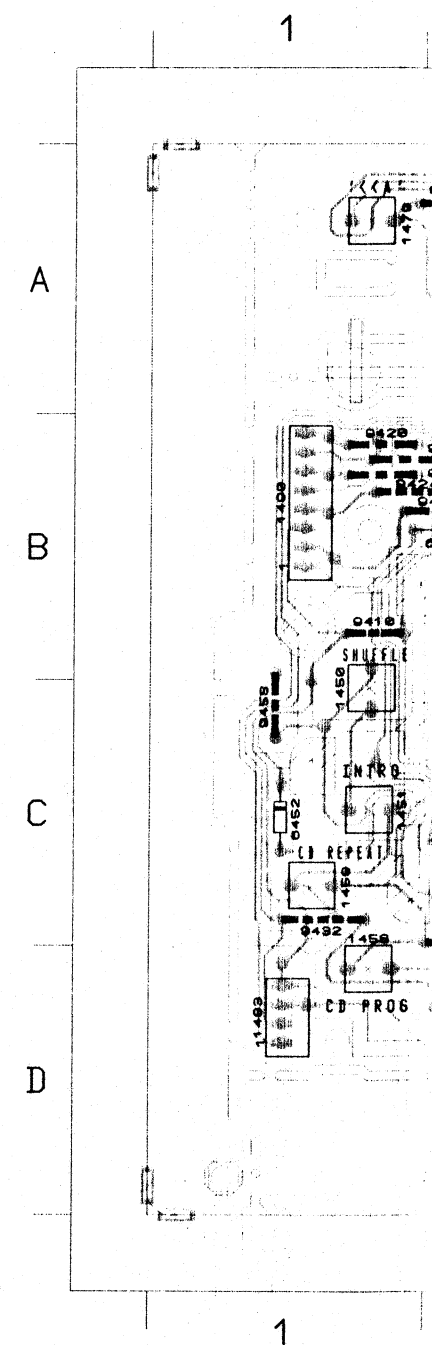


Block diagram

module-cdc.ccpanel-p2-940422-1



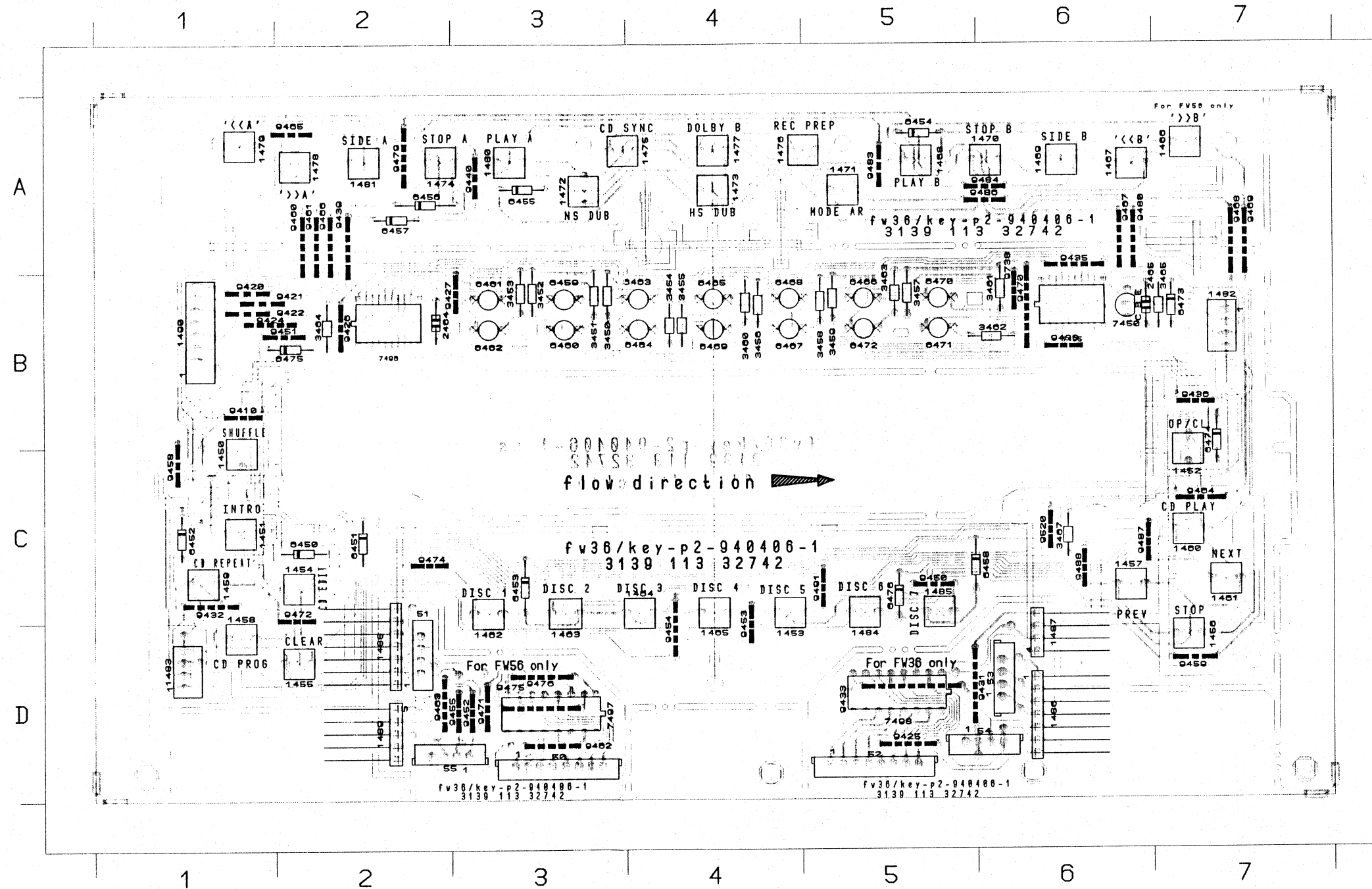
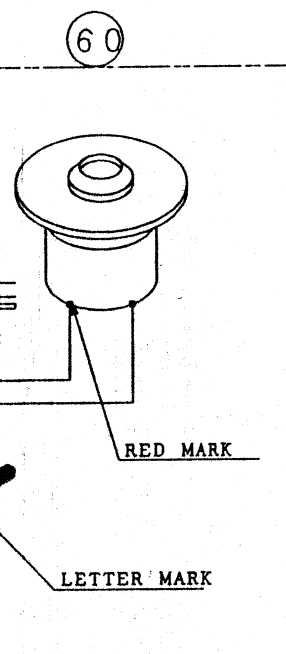
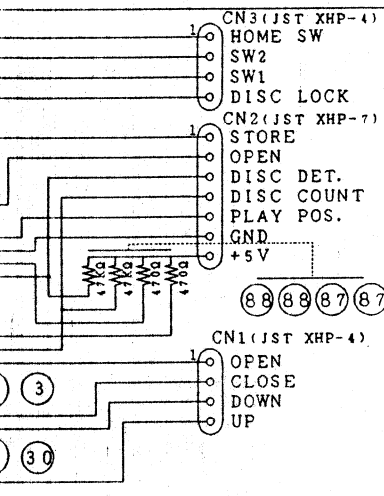
1801	C 2	3868	C 3
1802	A 5	3871	A 4
1804	D 5	3885	B 3
1805	C 5	3886	C 3
1806	D 1	3890	C 5
1807	D 3	3891	C 3
1808	D 3	3898	C 4
1830	C 2	3899	A 4
1850	A 4	5860	B 3
1852	C 2	5861	C 3
1880	A 3	5890	B 1
2769	C 4	6857	B 4
2770	D 4	6858	B 3
2802	B 1	6881	C 3
2818	B 2	6883	C 5
2831	B 1	7820	A 2
2833	C 1	7851	C 1
2843	A 3	7852	C 1
2847	C 1	7853	A 5
2848	A 3	7856	B 4
2849	C 1	7872	C 4
2850	B 1	7881	C 2
2856	B 3	7883	D 5
2860	B 3	7884	D 4
2866	C 4	7885	D 4
2870	D 4	7886	B 4
2874	D 4	9852	D 4
2875	C 4	9853	C 4
2881	B 3	9854	C 1
2882	C 4	9855	C 1
2885	D 4	9856	B 2
2892	C 3	9857	C 2
2896	B 5	9858	A 4
2899	A 4	9859	A 4
3760	A 5	9860	A 4
3761	A 5	9861	A 3
3801	B 2	9862	C 3
3815	A 3	9863	D 4
3818	A 2	9886	A 3
3820	C 1		
3825	A 1		
3826	A 1		
3827	A 1		
3828	A 1		
3829	A 1		
3830	A 1		
3832	B 2		
3834	B 1		
3835	B 1		
3838	B 1		
3847	C 1		
3848	B 1		
3849	C 1		
3851	B 1		
3860	A 4		
3863	D 3		
3864	D 3		
3865	D 3		



8-2

CDC KEY COMPONENT LAYOUT

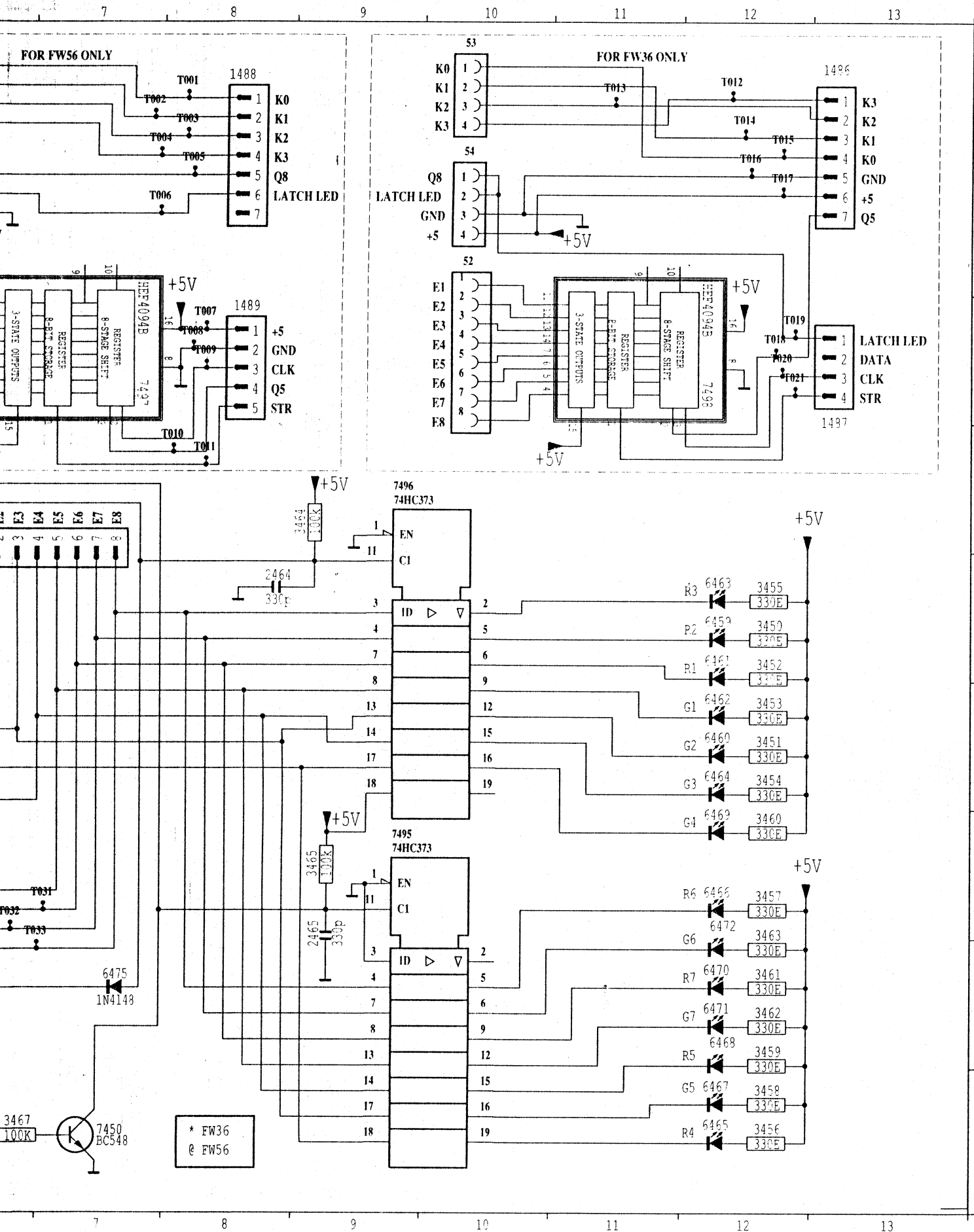
fw36/key-p2-940406-1 spcs
3139 113 32742



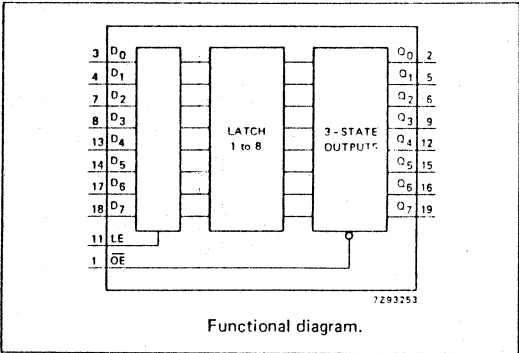
50 D 3	3459 B 5	9454
51 D 2	3460 B 4	9455
52 D 5	3461 B 3	9458
53 D 6	3462 B 5	9459
54 D 6	3463 B 5	9460
55 D 2	3464 B 2	9461
1450 C 1	3465 B 7	9462
1451 C 1	3467 C 6	9463
1452 C 7	6450 C 2	9464
1453 C 4	6451 C 2	9465
1454 C 2	6452 C 1	9466
1455 D 2	6453 C 3	9467
1456 D 7	6454 A 5	9468
1457 C 6	6455 A 3	9469
1458 D 1	6456 A 2	9470
1459 C 1	6457 A 2	9471
1460 C 7	6458 C 5	9472
1461 C 7	6459 B 3	9474
1462 C 3	6460 B 3	9475
1463 C 3	6461 B 3	9476
1464 C 4	6462 B 3	9479
1465 C 4	6463 B 4	9480
1466 A 7	6464 B 4	9483
1467 A 6	6465 B 4	9484
1468 A 5	6466 B 5	9486
1469 A 6	6467 B 4	9487
1470 A 6	6468 B 4	9488
1471 A 5	6469 B 4	9491
1472 A 3	6470 B 5	9520
1473 A 4	6471 B 5	9738
1474 A 2	6472 B 5	
1475 A 3	6473 B 7	
1476 A 5	6474 B 7	
1477 A 4	6475 B 2	
1478 A 2	6476 C 5	
1479 A 1	7450 B 6	
1480 A 3	7497 D 3	
1481 A 2	7498 D 5	
1482 B 7	9410 B 1	
1483 D 1	9420 B 1	
1484 C 5	9421 B 1	
1485 C 5	9422 B 1	
1486 D 6	9424 B 1	
1487 D 6	9425 D 5	
1488 D 2	9426 B 2	
1489 D 2	9427 B 3	
1490 B 1	9431 D 5	
2464 B 2	9432 C 1	
2465 B 6	9433 D 5	
3450 B 3	9435 A 6	
3451 B 3	9436 B 7	
3452 B 3	9438 B 6	
3453 B 3	9439 A 2	
3454 B 4	9440 A 3	
3455 B 4	9450 C 5	
3456 B 4	9451 B 2	
3457 B 5	9452 D 3	
3458 B 5	9453 D 4	

IC :





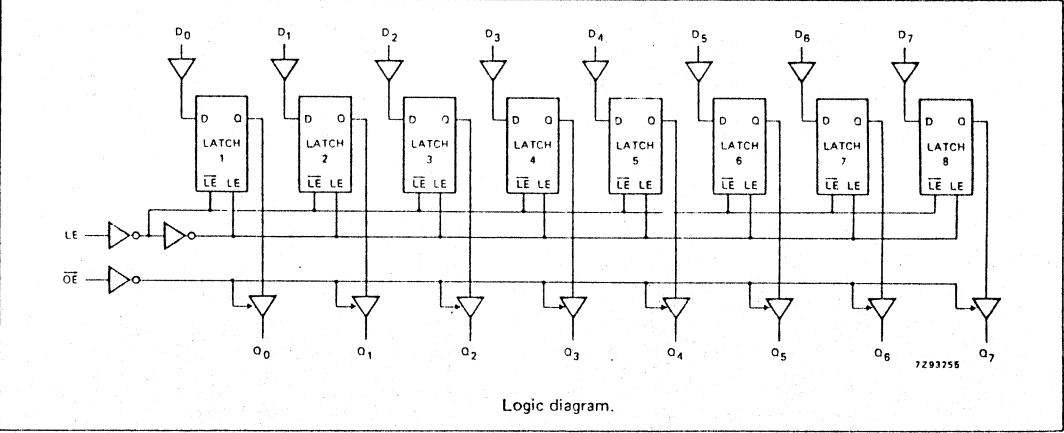
1450 E 1
1451 E 2
1452 E 3
1453 F 3
1454 F 2
1455 F 2
1456 F 3
1457 F 4
1458 F 1
1459 F 2
1460 F 3
1461 F 4
1462 G 2
1463 G 2
1464 G 3
1465 G 4
1466 G 1
1467 G 2
1468 G 3
1469 G 4
1470 H 1
1471 H 2
1472 H 3
1473 H 4
1474 H 1
1475 H 2
1476 H 3
1477 H 4
1478 I 1
1479 I 2
1480 I 3
1481 I 4
1482 B 1
1483 C 1
1484 E 1
1485 E 2
1486 A 3
1487 D 3
1488 A 8
1489 C 8
1490 E 6
1491 E 8
1492 E 9
1493 E 12
1494 E 12
1495 F 12
1496 F 12
1497 F 12
1498 F 12
1499 G 6
1500 B 6
1501 A 6
1502 B 10
1503 A 10
1504 A 10
1505 A 6
1506 E 4
1507 E 4
1508 F 4
1509 F 4
1510 F 4
1511 G 4
1512 H 4
1513 H 4
1514 D 4
1515 E 12
1516 F 12
1517 F 12
1518 F 12
1519 F 12
1520 F 12
1521 F 12
1522 G 12
1523 H 12
1524 H 12
1525 H 12
1526 G 12
1527 I 12
1528 I 12
1529 H 12
1530 G 12
1531 D 12
1532 G 12
1533 B 3
1534 B 3
1535 B 3
1536 H 7
1537 G 2
1538 I 7
1539 G 9
1540 D 9
1541 C 7
1542 C 12



FUNCTION TABLE

OPERATING MODES	INPUTS			INTERNAL LATCHES	OUTPUTS Q ₀ to Q ₇
	OE	LE	D _n		
enable and read register (transparent mode)	L	H	H	L	H
latch and read register	L	L	I	L	H
latch register and disable outputs	H	L	I	L	Z

H = HIGH voltage level
h = HIGH voltage level one set-up time prior to the HIGH-to-LOW LE transition
L = LOW voltage level
I = LOW voltage level one set-up time prior to the HIGH-to-LOW LE transition
Z = high impedance OFF-state

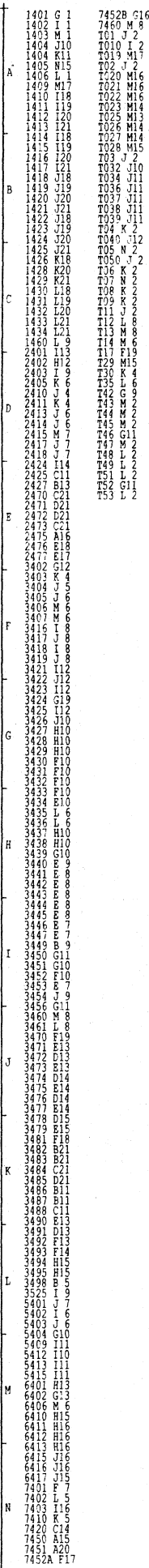


Logic diagram.

PCS 64 213



COM 1
S31
S30
S29
S28
S27
S26
S25
S24
S23
S22
S21
S20
S19
S18
S17
S16
S15
S14
S13
S12
S11
S10
S9
S8
S7
S6
S5
S4
S3
S2
S1
S0
COM 3
COM 2



1 ALL VOLTAGE ARE DC
WITH TOLERANCE OF +5 %

2 THE SET IS IN ON STATE.

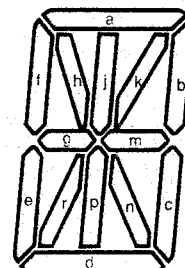
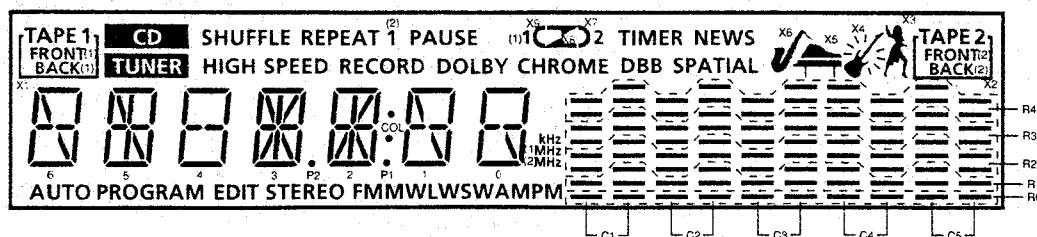


Figure 7. LCD pin connections

LCD DISPLAY PINS CONNECTIONS (NOT FOR /37)

PIN NO.	COM 0	COM 1	COM 2	COM 3
1	-	-	COM 2	-
2	-	-	-	COM 3
3	6gm	6f	6e	6n
4	6b	6a	6c	6d
5	FRONT (1)	6h	BACK (1)	TAPE 1,X1
6	SHUFFLE	CD	HIGH SPEED	AUTO
7	5g	5f	5e	PROGRAM
8	5b	5a	5c	5d
9	TUNER	5hn	5m	5jp
10	1 (1), 2	TIMER	RECORD	REPEAT
11	4gm	4f	4e	EDIT
12	4b	4a	4c	4d
13	X7	X9	X8	1 (2)
14	FRONT (2)	X6	BACK (2)	TAPE 2,X2
15	3g	3f	3e	3n
16	3b	3a	3c	3d
17	3k	3h	3m	3jp
18	3r	DBB	PAUSE	STEREO
19	2gm	2f	2e	2n
20	2b	2a	2c	2d
21	2kr	CHROME	DOLBY	2jp
22	LW	-	MW	R0
23	1gm	1f	1e	1n
24	1b	1a	1c	1d
25	COL	1h	FM,P1,MHz (1)	SW,P2,MHz (2)
26	X4	kHz	PM	AM
27	0gm	0f	0e	0n
28	0b	0a	0c	0d
29	X3	X5	SPATIAL	NEWS
30	C1R1	C1R2	C1R3	C1R4
31	C2R1	C2R2	C2R3	C2R4
32	C3R1	C3R2	C3R3	C3R4
33	C4R1	C4R2	C4R3	C4R4
34	C5R1	C5R2	C5R3	C5R4
35	COM 0	-	-	-
36	-	COM 1	-	-

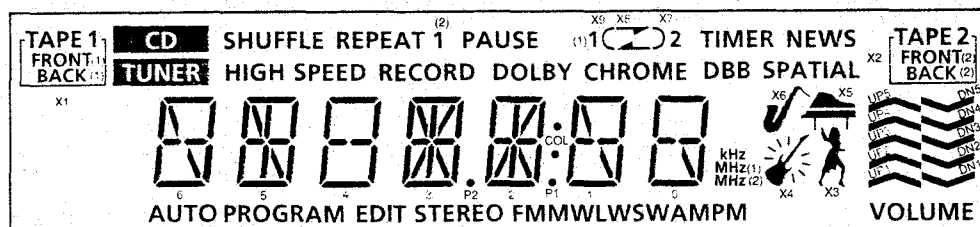
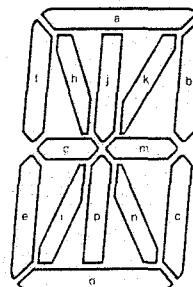


Figure 7. LCD pins connections



LCD DISPLAY PINS CONNECTIONS (FOR /37)

PIN NO.	COM 0	COM 1	COM 2	COM 3
1	-	-	COM 2	-
2	-	-	-	COM 3
3	6gm	6f	6e	6n
4	6b	6a	6c	6d
5	FRONT (1)	6h	BACK (1)	TAPE 1,X1
6	SHUFFLE	CD	HIGH SPEED	AUTO
7	5g	5f	5e	PROGRAM
8	5b	5a	5c	5d
9	TUNER	5hn	5m	5jp
10	1 (1), 2	TIMER	RECORD	REPEAT
11	4gm	4f	4e	EDIT
12	4b	4a	4c	4d
13	X7	X9	X8	1 (2)
14	FRONT (2)	X6	BACK (2)	TAPE 2,X2
15	3g	3f	3e	3n
16	3b	3a	3c	3d
17	3k	3h	3m	3jp
18	3r	DBB	PAUSE	STEREO
19	2gm	2f	2e	2n
20	2b	2a	2c	2d
21	2kr	CHROME	DOLBY	2jp
22	LW	-	MW	R0
23	1gm	1f	1e	1n
24	1b	1a	1c	1d
25	COL	1h	FM,P1,MHz (1)	SW,P2,MHz (2)
26	X4	kHz	PM	AM
27	0gm	0f	0e	0n
28	0b	0a	0c	0d
29	X3	X5	SPATIAL	NEWS
30	UP1	DN1	-	VOLUME
31	-	-	-	-
32	-	-	-	-
33	DN2	DN3	DN4	DN5
34	UP1	UP3	UP4	UP5
35	COM 0	-	-	-
36	-	COM 1	-	-

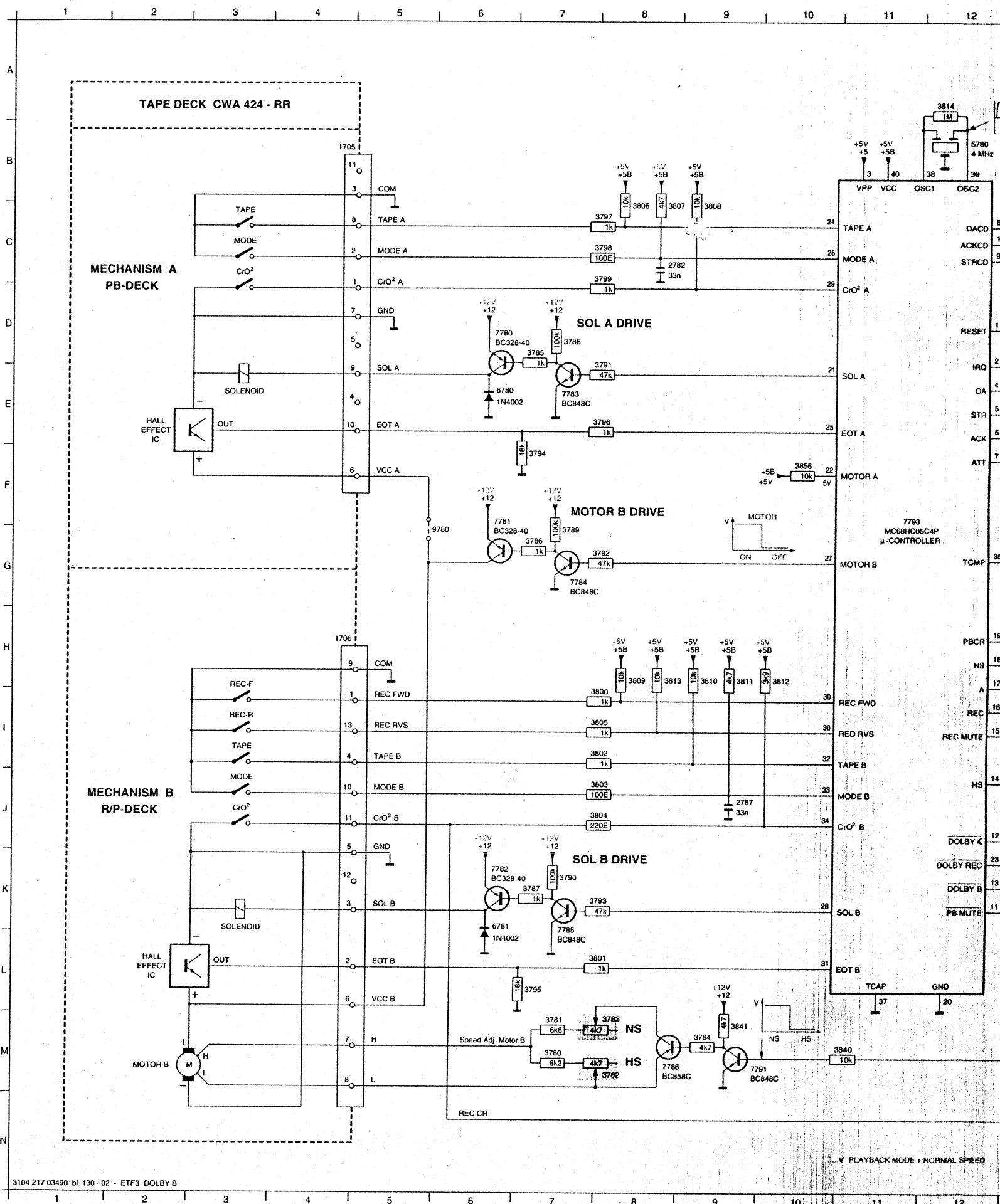
EXPLANATION OF ABBREVIATIONS

A	Deck A or B	PB Lever ADJ L	Playback Lever Adjustment Left
CRO2	Chrome	PB CR	Playback Chrome
Dolby NR	Dolby Noise Reduction	PB mute	Playback mute
Dolby Mode	Dolby Mode (Rec or Play)	PB Lever ADJ R	Playback Lever Adjustment Right
DSA STR	DSA Strobe	PBL	Playback Left
DSA DA	DSA Data	PBR	Playback Right
DSA ACK	DSA Acknowledge	Rec Mute	Recording Mute
EOT A	End of Tape A	Rec R	Recording Right
EOT B	End of Tape B	Rec L	Recording Left
FE	Ferro	Rec CR	Recording Chrome
HS	High Speed	REC RVS	Recording Reverse
MODE A	Slide Deck A Up / Down	REC	Recording
MODE B	Slide Deck B Up / Down	REC FWD	Recording Forward
NC	Not Connect	SOL A	Solenoid A
NS	Normal Speed	SOL B	Solenoid B
PB CR	Playback Chrome	VCC B	VCC Motor B
PB mute	Playback mute		

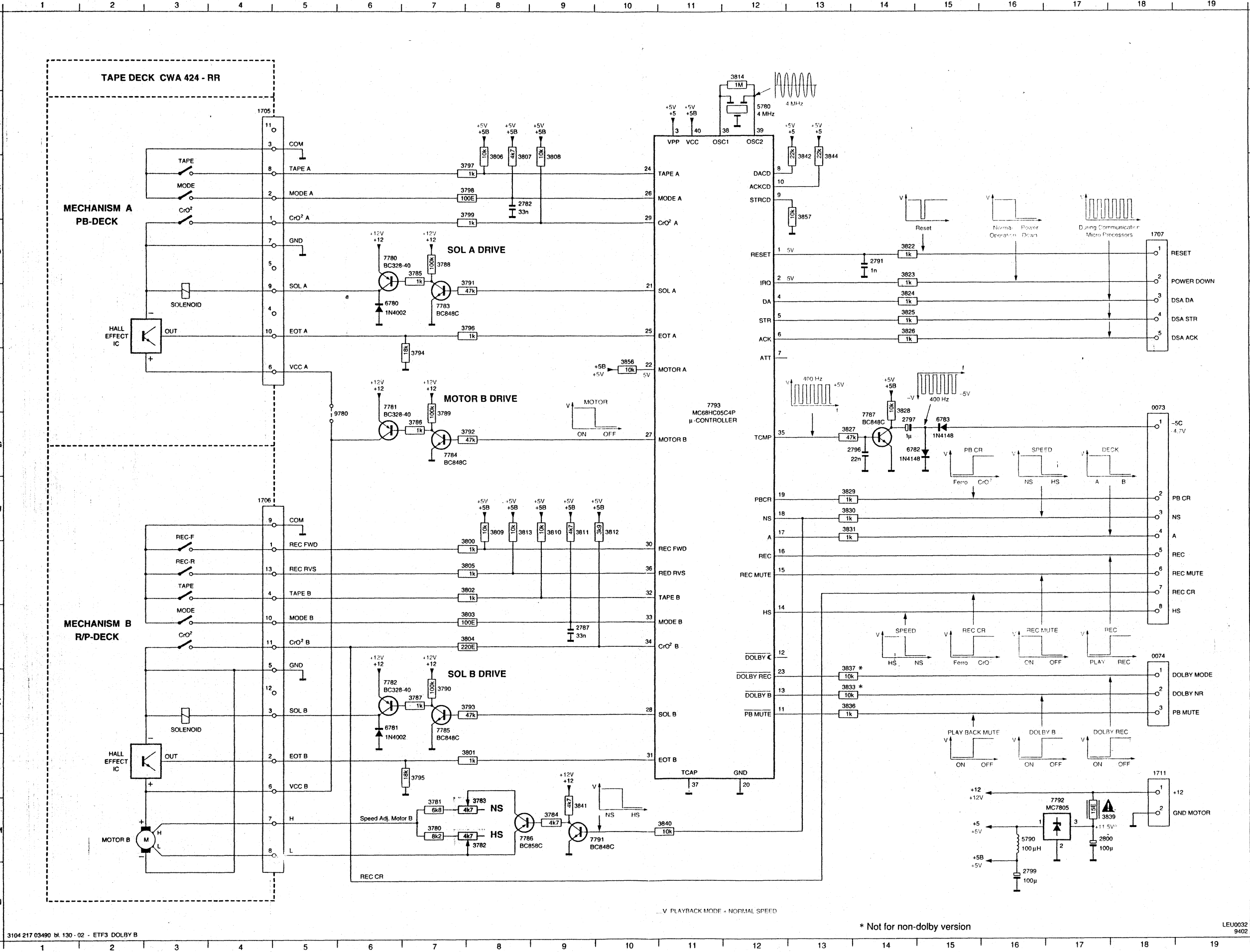
µProcessor 7793 pinning , values , In- Output Port

Pin	Discription	I/O PORT	Values
1	Reset	I	Must be driven by external reset circuitry
2	IRQ	I	0 = Power down 1 = normal operation
3	VPP	-	+5V
4	Date	I/O	DSA bus data line
5	Strobe	I/O	DSA bus clock line
6	Acknowledge	I/O	DSA bus acknowledge line
7	Attenuate	O	0 = Off 1 = On
8	DSA CD Data	I/O	DSA CD bus data line
9	DSA CD Strobe	I/O	DSA Bus strobe line
10	DSA CD Acknowledge	I/O	DSA CD bus Acknowledge line
11	Playback Mute	O	0 = Playback mute On
12	Dolby C	O	1 = Dolby C Off 0 = Dolby C On
13	Dolby B	O	1 = Dolby B Off 0 = Dolby B On
14	High Speed	O	0 = Normal speed 1 = High speed
15	Record Mute	O	1 = Record mute On
16	Play / Record	O	0 = Play 1 = Record
17	Playback A/B	O	1 = Deck A 0 = Deck B
18	Normal Speed	O	0 = High speed 1 = Normal speed
19	Playback Fe/CrO2	O	0 = Ferro 1 = CrO2
20	GND	-	Ground
21	Solenoid Deck A	O	Solenoid Deck A
22	Motor deck A	O	Not used
23	Dolby Record	O	0 = Record 1 = Play
24	Tape Detect Deck A	I	0 = Tape present in deck A
25	Halle IC Deck A	I	4 Pulses per rotation of winding wheel
26	Mode Deck A	I	0 = Slide up 1 = Slide down
27	Main Motor	O	Motor B
28	Solenoid Deck B	O	Solenoid Deck B
29	CrO2 Deck A	I	0 = Ferro Tape 1 = CrO2
30	Record Frontside Deck B	I	0 = Record enabled on frontside
31	Hall IC Deck B	I	4 Pulses per rotation of winding wheel
32	Tape Detect Deck B	I	0 = Tape present in deck B
33	Mode Deck B	I	0 = Slide up 1 = Slide down
34	CrO2 Deck B	I	0 = Ferro Tape 1 = CrO2
35	TCMP	O	400 Hz oscillator
36	Record Rearside Deck B	I	0 = Record enable on rearside
37	TCAP	I	Not used
38	OSC 1	-	4 MHz
39	OSC 2	-	4 MHz
40	VCC	-	+5V

ETF3 CONTROL PART (DOLBY B & NON-DOLBY)



ETF3 CONTROL PART (DOLBY B & NON-DOLBY)



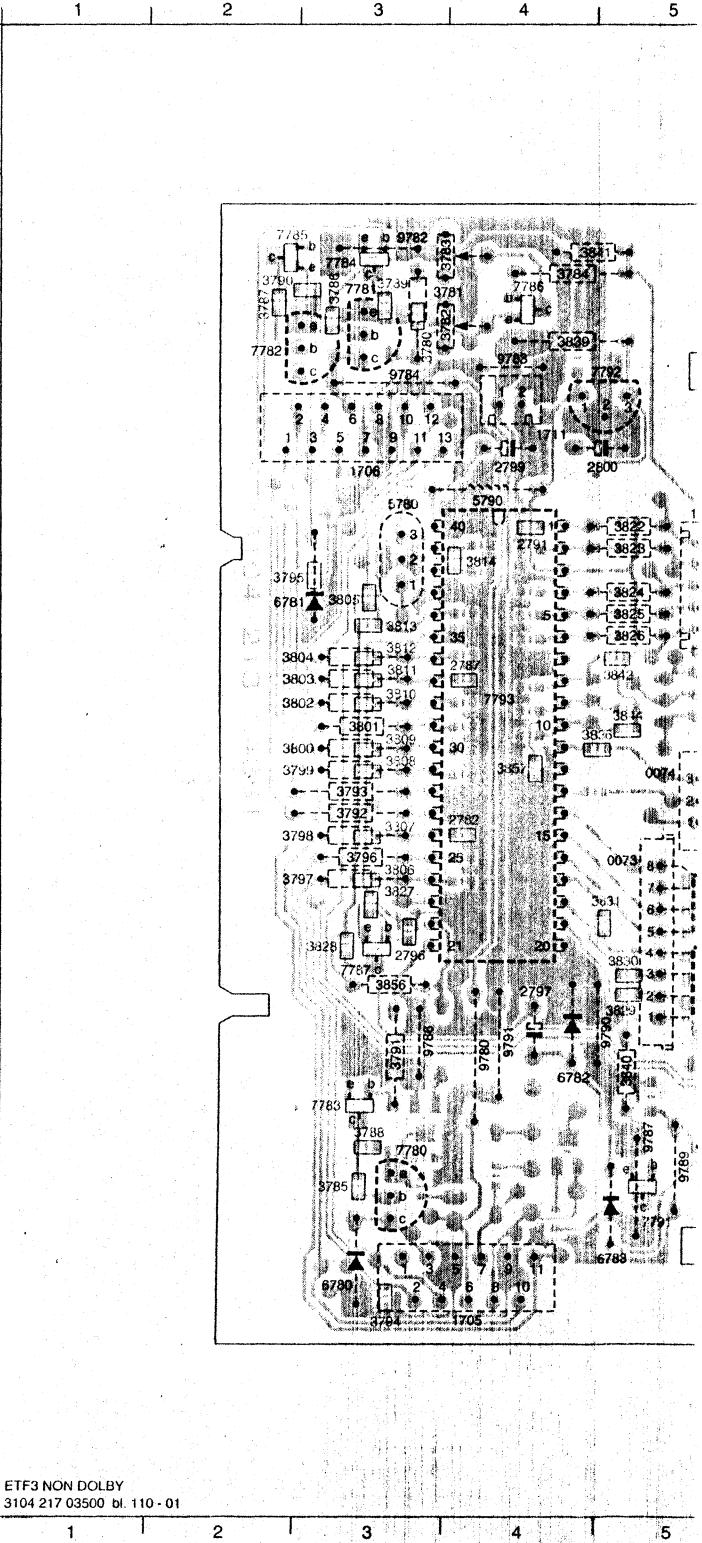
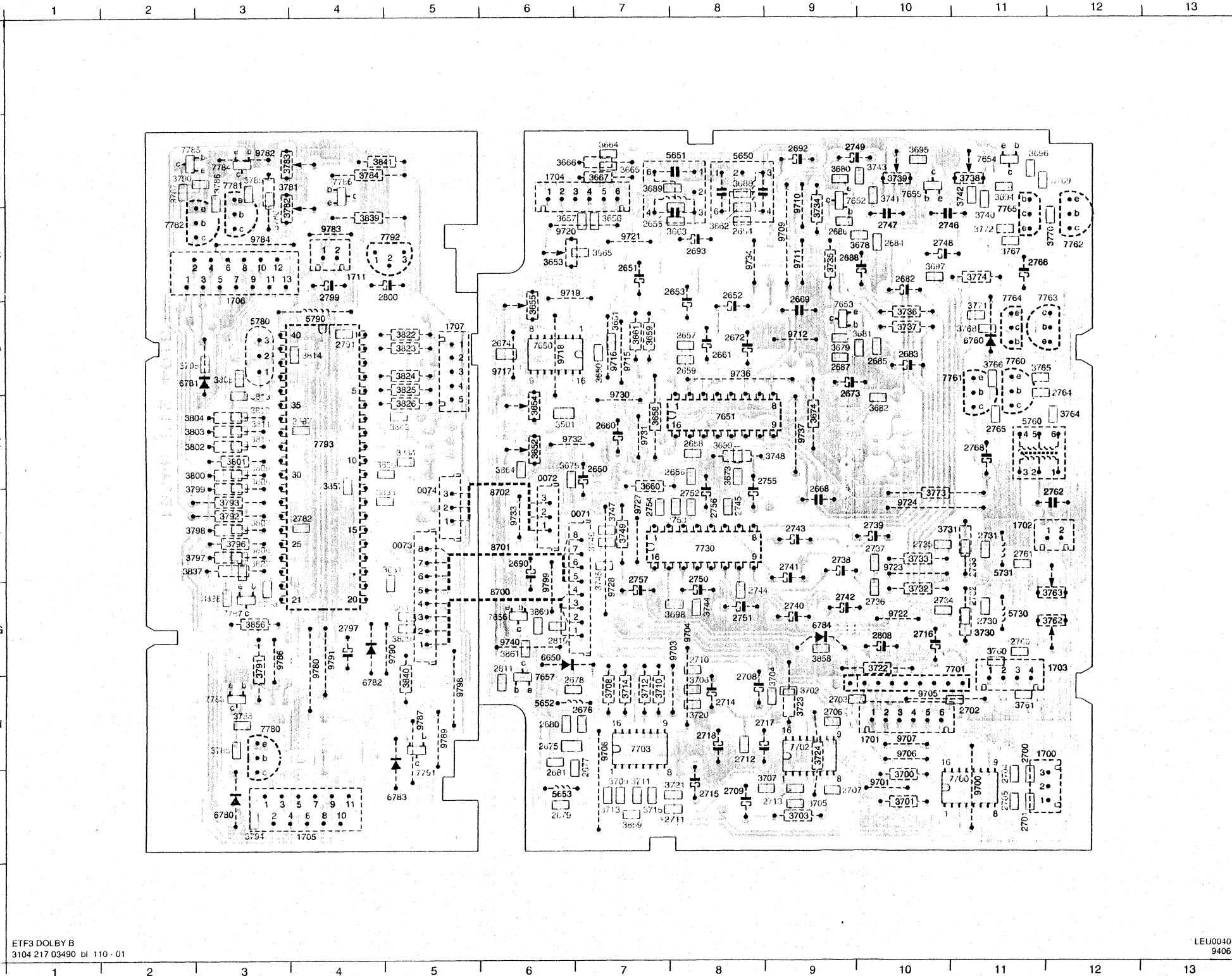
- 0073 F18
- 0074 J18
- 1705 B4
- 1706 H4
- 1707 D18
- 1711 L18
- 2782 C8
- 2787 J8
- 2791 D14
- 2796 G13
- 2797 G14
- 2799 N16
- 2800 M17
- 2800 M7
- 3781 M7
- 3782 M8
- 3783 M8
- 3784 M9
- 3785 D7
- 3786 G7
- 3787 K7
- 3788 D7
- 3789 G7
- 3790 K7
- 3791 E7
- 3792 G7
- 3793 K7
- 3794 F7
- 3795 L7
- 3796 E7
- 3797 C7
- 3798 C7
- 3799 C7
- 3800 I7
- 3801 L7
- 3802 I7
- 3803 J7
- 3804 J7
- 3805 I7
- 3806 C8
- 3807 C8
- 3808 C9
- 3809 H8
- 3810 H9
- 3811 H9
- 3812 H10
- 3813 H6
- 3814 A12
- 3822 D14
- 3823 D14
- 3824 E14
- 3825 E14
- 3826 E14
- 3827 G13
- 3828 G14
- 3829 H13
- 3830 H13
- 3831 H13
- 3833 K13
- 3836 K13
- 3837 K13
- 3839 M17
- 3840 M10
- 3841 M9
- 3842 C13
- 3844 C13
- 3856 F10
- 3857 D13
- 5780 B12
- 5790 M16
- 6780 E6
- 6781 K6
- 6782 G14
- 6783 G15
- 7780 D6
- 7781 F6
- 7782 K6
- 7783 E7
- 7784 G7
- 7785 L7
- 7786 M8
- 7787 G14
- 7791 M9
- 7792 M17
- 7793 F11
- 9780 G5

ETF3 DOLBY B (for all versions except /21)

ETF3 NON-DOLBY (For /21 only)

0071	F6	2657	D8	2685	D10	2713	I8	2744	G8	2768	E11	3658	E7	3694	B11	3714	H7	3743	B10	3773	F10	3798	F2	3825	D5	3861	G6	7651	E8	7782	C2	9709	C9	9734	C8
0072	E6	2658	E8	2686	C9	2714	H8	2745	F8	2782	F4	3659	D7	3695	B10	3715	I7	3744	G8	3774	C11	3799	F2	3826	E5	3864	E6	7652	B9	7783	H3	9710	C9	9736	D8
0073	F5	2659	D8	2687	D9	2715	I8	2746	C10	2787	E4	3660	F7	3696	B11	3720	H8	3745	G7	3780	C3	3800	E2	3827	F3	3865	C7	7653	D9	7784	B3	9711	C9	9737	E9
0074	F5	2660	E7	2688	C9	2716	G10	2747	C10	2791	D4	3661	D7	3697	C10	3721	I7	3746	F7	3781	B3	3801	E3	3828	G3	3866	B8	7654	B11	7785	B2	9712	D9	9740	G6
1700	H11	2661	D8	2690	F6	2717	H8	2748	C10	2796	G3	3662	C8	3698	G7	3722	G10	3747	F7	3782	C4	3802	E2	3829	G5	3867	B7	7655	B10	7786	B4	9715	D7	9780	H4
1701	H10	2668	F9	2692	B9	2718	H8	2749	B9	2797	G4	3663	C7	3699	E8	3723	H9	3748	E9	3783	B4	3803	E2	3830	G5	3868	H6	7656	G6	7787	G3	9716	D7	9782	B3
1702	F11	2669	D9	2693	C8	2730	G11	2750	G8	2799	D4	3664	B7	3700	I10	3724	H9	3749	F7	3784	B4	3804	E2	3831	F4	3869	I6	7657	H6	7791	I5	9717	D6	9783	C4
1703	G12	2672	D8	2700	H11	2731	F11	2751	G8	2800	D4	3665	B7	3701	I10	3730	G11	3760	G11	3785	H3	3805	D3	3833	F4	3870	G11	7700	I10	7792	C4	9718	D6	9784	C3
1704	B6	2673	E9	2701	I11	2732	G11	2752	F8	2808	G10	3666	B6	3702	H9	3731	F10	3761	H11	3786	B3	3806	F3	3836	E4	3871	F11	7701	G10	7793	E4	9719	C6	9786	G3
1705	I4	2674	D6	2702	H11	2733	F11	2753	F7	2810	G6	3667	B7	3703	I9	3732	G10	3762	G11	3787	B2	3807	F3	3837	F2	3872	H9	7702	H9	7800	G6	9720	C6	9787	H5
1706	D3	2675	H6	2703	H9	2734	G10	2754	F7	2811	G6	3673	E8	3704	H9	3733	F10	3763	G11	3788	H3	3808	E3	3840	H5	3873	D3	7703	H7	7801	F6	9721	C7	9789	H5
1707	D5	2676	H6	2704	I11	2735	F10	2755	E8	3501	E6	3674	E9	3705	I9	3734	C9	3764	E12	3789	B3	3809	E3	3841	B4	3874	D5	7704	F8	7802	F6	9722	G10	9790	G5
1711	C4	2677	I7	2705	I11	2736	G10	2756	F8	3650	D7	3675	E6	3706	H8	3735	C9	3765	D11	3790	B2	3810	E3	3842	E5	3875	D11	7705	D10	7803	I10	9723	F10	9791	G4
2650	E7	2678	H6	2706	H9	2737	F10	2757	G7	3651	D7	3678	C9	3707	I8	3736	D10	3766	D11	3791	H3	3811	E3	3843	E5	3876	D11	7706	D10	7804	I10	9724	F10	9792	H5
2651	C7	2679	I6	2707	I9	2738	F9	2760	G11	3652	E6	3679	D9	3708	H7	3737	D10	3767	C11	3792	F3	3812	E3	3844	E5	3877	I3	7707	C12	7805	G8	9727	F7	9793	G6
2652	C8	2680	H6	2708	H8	2739	F10	2761	F11	3653	C6	3680	B9	3709	I7	3738	B11	3768	D11	3793	F3	3813	E3	3845	G3	3878	D2	7708	D11	7806	G8	9728	G7		
2653	C7	2681	I6	2709	I8	2740	G9	2762	F11	3654	E6	3681	D9	3710	H7	3739	B10	3769	B12	3794	I3	3814	D4	3857	F4	3879	H4	7709	D11	7807	H10	9730	E7		
2654	C8	2682	C10	2710	G8	2741	F9	2764	E12	3655	D6	3682	E10	3711	H7	3740	C11	3770	C12	3795	D2	3822	D5	3858	G9	3880	I5	7710	C11	7808	H10	9731	E7		
2655	C7	2683	D10	2711	I7	2742	G9	2765	E11	3656	C7	3683	B8	3712	H7	3741	B10	3771	D11	3796	F3	3823	D5	3859	I7	3881	G9	7711	H3	7809	H10	9732	E6		
2656	E7	2684	C10	2712	H8	2743	F9	2766	C11	3657	C6	3684	B7	3713	I7	3742	C11	3772	C11	3797	F2	3824	D5	3860	G6	3882	D6	7712	B3	7810	H7	9733	F6		

0071	F6	2679	I6	2706	H9	2735	F10	2753	F7	2800	D4	3686	E1
0072	E6	2680	H6	2707	I9	2736	G10	2754	F7	2808	G10	3687	C1
0073	F5	2681	I6	2708	H8	2737	F10	2755	E8	2810	G6	3688	B
0074	F5	2682	C10	2709	I8	2738	F9	2756	F8	2811	G6	3689	B
1700	H11	2683	D10	2710	G8	2739	F10	2757	G7	3656	C7	3696	B
1701	H10	2684	C10	2711	I7	2740	G9	2760	G11	3657	C6	3697	C
1702	F11	2685	D10	2712	H8	2741	F9	2761	F11	3658	B7	3698	G
1703	G12	2686	C9	2713	I8	2742	G9	2762	F11	3659	B7	3700	H
1704	B6	2687	D9	2714	H8	2743	F9	2763	E12	3660	B6	3701	I
1705	I4	2688	C9	2715	I8	2744	G8	2764	E11	3661	B7	3702	H
1706	D3	2689	B9	2716	G10	2745	F8	2765	C11	3662	E6	3703	I9
1707	D5	2690	C8	2717	H8	2746	C10	2766	E11	3663	C9	3704	H
1711	C4	2700	H11	2718	H8	2747	C10	2767	F4	3664	D9	3705	I9
2674	D6	2701	I11	2719	G11	2748	C10	2768	E4	3665	B9	3706	H
2675	H6	2702	H11	2721	F11	2749	B9	2769	D4	3666	B9	3707	I8
2676	H6	2703	H9	2722	G11	2750	G8	2770	G3	3667	E10	3708	H
2677	I7	2704	I11	2723	F11	2751	G8	2771	G4	3668	E6	3709	I7
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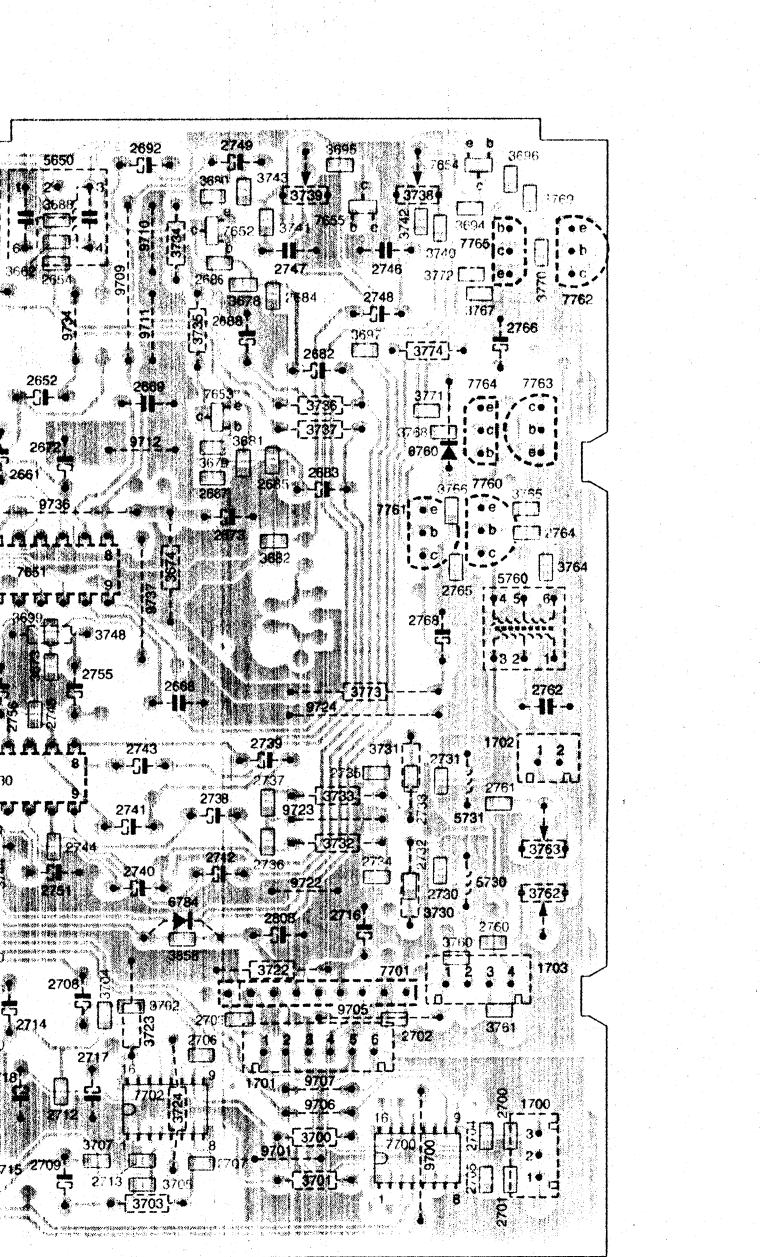


ETF3 NON-DOLBY (For /21 only)

F10	3798	F2	3825	D5	3861	G6	7651	E8	7782	C2	9709	C9	9734	C8
C11	3799	F2	3826	E5	3864	E6	7652	B9	7783	H3	9710	C9	9736	D8
C3	3800	E2	3827	F3	3865	C7	7653	D9	7784	B3	9711	C9	9737	E9
B3	3801	E3	3828	G3	3866	B8	7654	B11	7785	B2	9712	D9	9740	G6
C4	3802	E2	3829	G5	3867	B7	7655	B10	7786	B4	9715	D7	9780	H4
B4	3803	E2	3830	G5	3868	H6	7656	G6	7787	G3	9716	D7	9782	B3
B4	3804	E2	3831	F4	3869	H6	7657	H6	7791	I5	9717	D6	9783	C4
H3	3805	D3	3833	F4	3870	G11	7700	I10	7792	C4	9718	D6	9784	C3
B3	3806	F3	3836	E4	3871	F11	7701	G10	7793	E4	9719	C6	9786	G3
B2	3807	F3	3837	F2	3872	E11	7702	H9	8700	G6	9720	C6	9787	H5
H3	3808	E3	3839	C4	3873	D3	7703	H7	8701	F6	9721	C7	9789	H5
B3	3809	E3	3840	H5	3874	D4	7730	F8	8702	F6	9722	G10	9790	G5
B2	3810	E3	3841	B4	3875	G6	7760	D11	9700	I11	9723	F10	9791	G4
H3	3811	E3	3842	E5	3876	D11	7761	D10	9701	I10	9724	F10	9798	H5
F3	3812	E3	3844	E5	3878	I3	7762	C12	9703	G8	9727	F7	9799	G6
F3	3813	E3	3856	G3	3879	D2	7763	D11	9704	G8	9728	G7		
I3	3814	D4	3857	F4	3880	H4	7764	D11	9705	H10	9730	E7		
D2	3822	D5	3858	G9	3881	I5	7765	C11	9706	H10	9731	E7		
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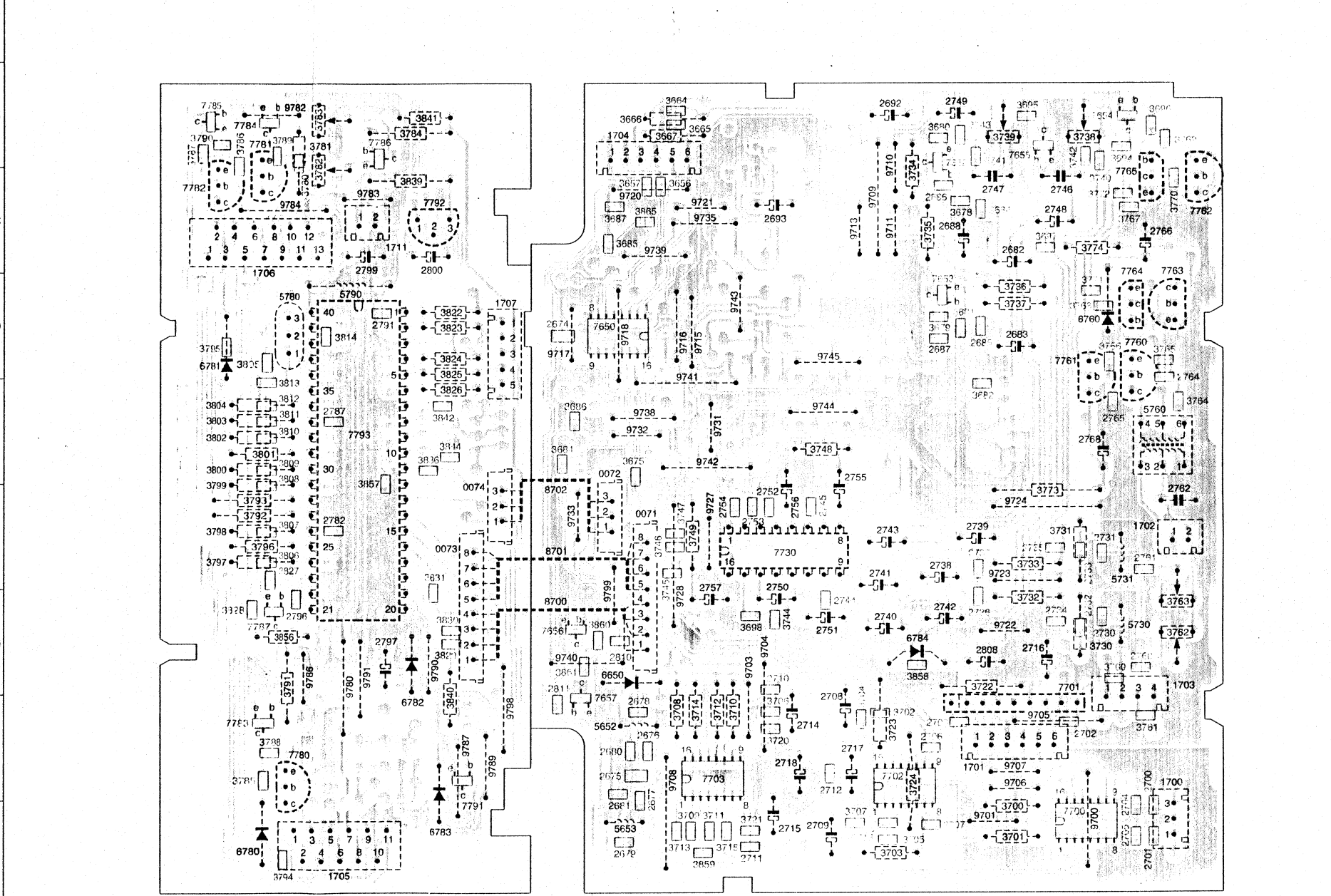
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0072	E6	2680	H6	2707	I9	2736	G10	2754	F7	2808	G10	3687	C6	3712	H7	3739	B10	3767	C11	3790	B2	3808	E3	3839	C4	5790	D4	7703	H7	7793	E4	9717	D6	9743	D7
0073	F5	2681	I6	2708	H8	2737	F10	2755	E8	2810	G6	3694	B11	3713	I7	3740	C11	3768	D11	3791	H3	3809	E3	3840	H5	5790	D4	7703	F8	8700	G6	9718	D6	9744	E8
0074	F5	2682	C10	2709	I8	2738	F9	2756	F8	2811	G6	3695	B10	3714	H7	3741	B10	3769	B12	3792	F3	3810	E3	3841	B4	5790	D4	7703	D11	8701	F6	9720	C6	9745	D8
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1701	H10	2684	C10	2711	I7	2740	G9	2760	G11	3657	C6	3697	C10	3720	H8	3743	B10	3771	D11	3794	I3	3812	E3	3844	E5	5790	D4	7703	D12	8702	F6	9722	G10	9782	B3
1702	F11	2685	D10	2712	H8	2741	F9	2761	F11	3658	B7	3698	G7	3721	I7	3744	G8	3772	C11	3795	D2	3813	E3	3845	G3	5790	D4	7703	D11	8703	F6	9723	F10	9783	C4
1703	G12	2686	C9	2713	I8	2742	G9	2762	F11	3659	B7	3699	B7	3722	G10	3745	G7	3773	F10	3796	F3	3814	D4	3846	F4	5790	D4	7703	D11	8703	G8	9724	F10	9784	C3
1704	B6	2687	D9	2714	H8	2743	F9	2763	E12	3660	B6	3701	I10	3723	H9	3746	F7	3774	C11	3797	F2	3815	E3	3847	G9	5790	D4	7703	D11	8704	G8	9725	F10	9785	G3
1705	I4	2688	C9	2715	I8	2744	G8	2764	E11	3661	B7	3702	H9	3724	H9	3747	F7	3775	C3	3798	F2	3816	D4	3848	I7	5790	D4	7703	D11	8705	H10	9726	G7	9786	H5
1706	D3	2689	B9	2716	G10	2745	F8	2765	C11	3662	E6	3703	I9	3725	G11	3748	E8	3776	B3	3799	F2	3817	D4	3849	G6	5790	D4	7703	D11	8706	H10	9727	F7	9787	H5
1707	D5	2690	C8	2717	H8	2746	C10	2766	E11	3663	C9	3704	H9	3726	G10	3749	F7	3777	C4	3800	E2	3818	E3	3850	E5	5790	D4	7703	D11	8707	H10	9728	G7	9788	H5
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2674	D6	2701	I11	2730	G11	2748	C10	2787	E4	3680	B9	3706	H8	3733	F10	3761	H11	3784	B4	3802	E2	3827	F3	3866	H6	5790	D4	7703	D11	8709	C9	9735	C7	9798	H5
2675	H6	2702	H11	2731	F11	2749	B9	2791	D4	3681	D9	3707	I8	3734	C9	3762	G11	3785	H3	3803	E2	3828	G3	3867	I6	5790	D4	7703	D11	8710	C9	9736	E6	9799	G6
2676	H6	2703	H9	2732	G11	2750	G8	2796	G3	3682	E10	3708	H7	3735	C9	3763	G11	3786	B3	3804	E2	3829	G5	3868	G11	5790	D4	7703	D11	8711	C9	9737	C7		
2677	I7	2704	I11	2733	F11	2751	G8	2797	G4	3684	E6	3709	I7	3736	D10	3764	E12	3787	B2	3805	D3	3830	G5	3869	F11	5790	D4	7703	D11	8712	C9	9738	G6		
2678	H6	2705	I11	2734	G10	2752	F8	2799	D4	3685	C6	3710	H7	3737	D10	3765	D11	3788	H3	3806	F3	3831	F4	3870	E11	5790	D4	7703	D11	8713	D7	9741	E7		

8 9 10 11 12 13



LEU0040
9406

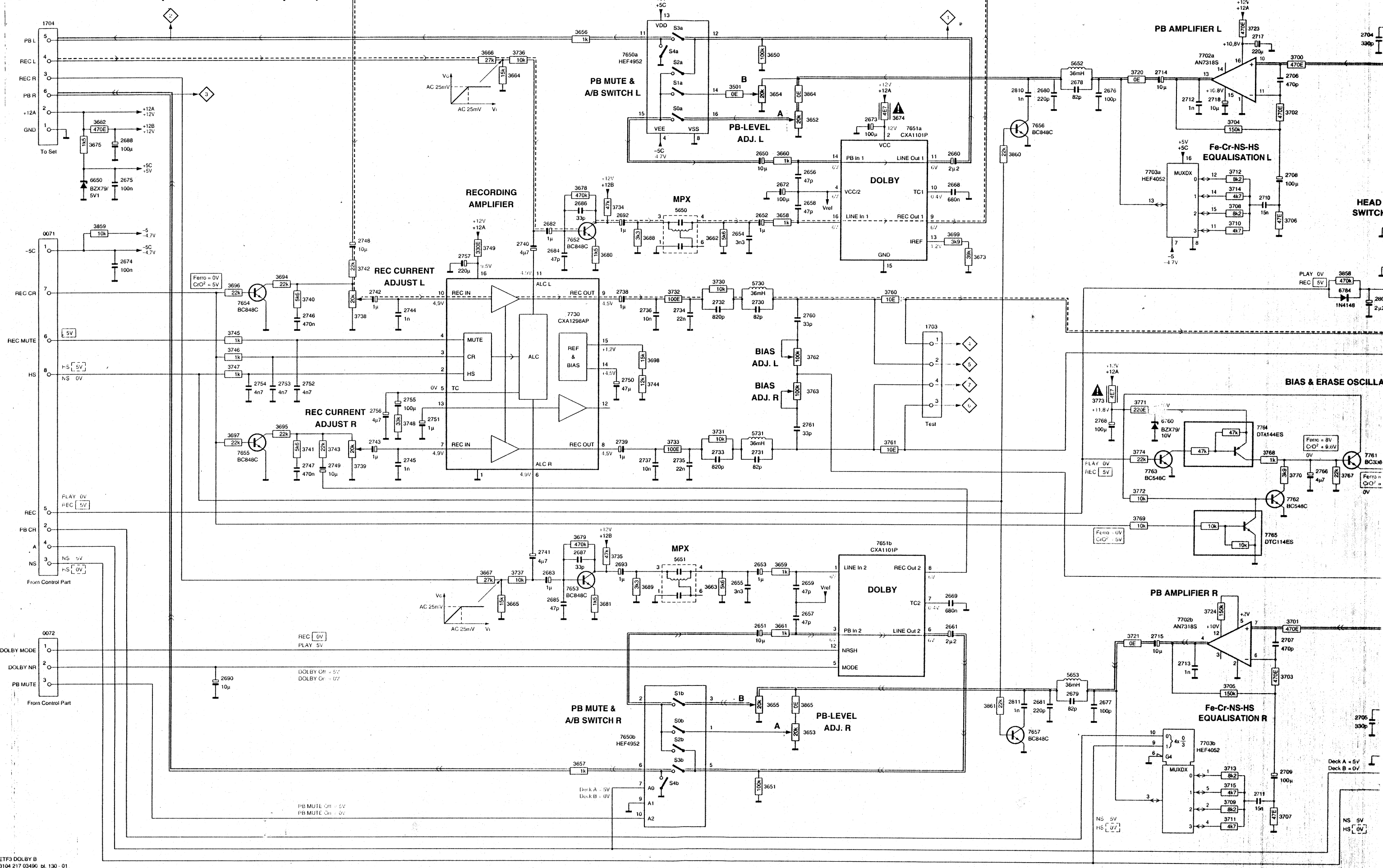
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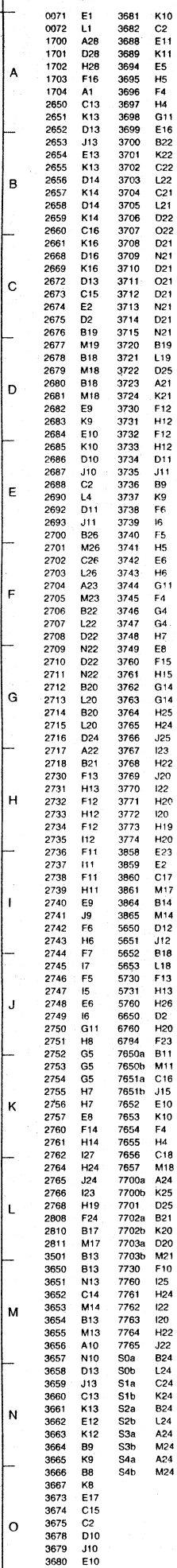
ETF3 NON DOLBY
3104 217 03500 bl. 110 - 01

LEU0045
9407

DOLBY B ANALOG PART (For all versions except /21)



ETFS DOLBY B
3104 217 03490 01.130-01



EXPLANATION OF ABBREVIATIONS

A	Deck A or B
CRO2	Chrome
Dolby NR	Dolby Noise Reduction
Dolby Mode	Dolby Mode (Rec or Play)
DSA STR	DSA Strobe
DSA DA	DSA Data
DSA ACK	DSA Acknowledge
EOT A	End of Tape A
EOT B	End of Tape B
FE	Ferro
HS	High Speed
MODE A	Slide Deck A Up / Down
MODE B	Slide Deck B Up / Down
NC	Not Connect
NS	Normal Speed
PB CR	Playback Chrome
PB mute	Playback mute
PB Lever ADJ L	Playback Lever Adjustment Left
PB CR	Playback Chrome
PB mute	Playback mute
PB Lever ADJ R	Playback Lever Adjustment Right
PBL	Playback Left
PBR	Playback Right
Rec Mute	Recording Mute
Rec R	Recording Right
Rec L	Recording Left
Rec CR	Recording Chrome
REC RVS	Recording Reverse
REC	Recording
REC FWD	Recording Forward
SOL A	Solenoid A
SOL B	Solenoid B
VCC B	VCC Motor B

SERVICE SOLUTION for RIF INTERFERENCE

Re-adjust oscillator coil 5760 (half a turn)
so that the interference is gone.

ELECTRICAL MEASUREMENTS AND ADJUSTMENTS

Adjustment	Cassette	Recorder in position	Measure on	Read on	Adjust with	Value	Remarks
Deck A High Speed HS	SBC419 3150Hz	High Speed dubbing	Test point TP 1	Counter	3782	5,4kHz ±0,5%	#1
Deck A Norm.Speed NS	SBC419 3150Hz	Play in forward direction	Test point TP 2	Counter	3783	3,15 kHz ±0,5%	
Wow and Flutter	SBC419 3150Hz	Play in forward direction	Test point TP 2	Wow and Flutter meter	check	< 0,4%	
Deck A Playback DolbyLevel	Dolby 200 N.Wb/m	Play in forward direction	TP 2 left ch TP 3 right ch	AC mV meter	3652 3653	548mV ±0,5dB	see #2
Deck B Playback DolbyLevel	Dolby 200 N.Wb/m	Play in forward direction	TP 2 left ch TP 3 right ch	AC mV meter	3654 3655	548mV ±0,5dB	
Deck A Azimuth	SBC 419 12kHz	Play in forward direction or Play in reverse direction	TP 2 left ch or TP 3 right ch	AC mV meter	Left screw Norm.Dir.(>) Right screw Rev.Dir.(<)	max. output left=right	
Deck B Azimuth	SBC 419 12kHz	Play in forward direction or Play in reverse direction	TP 2 left ch or TP 3 right ch	AC mV meter	Left screw Norm.Dir.(>) Right screw Rev.Dir.(<)	max. output left=right	
Bias current Chrome		Record mode and Chrome mode	TP 4 5 L.ch TP 6 7 R.ch	AC mV meter	3762 3763	7 mV	see #3
Bias current Ferro		Record mode and Ferro mode	TP 4 5 L.ch TP 6 7 R.ch	AC mV meter	check check	4,4mV ±0,5dB	
Recording current	Dolby 200N Wb/m (deck A) and Chrome.cass (deck B) Dolby 200N Wb/m (deck A) and Ferro.cass (deck B)	Record mode and Chrome mode Record mode and Ferro mode	TP 4 5 L.ch TP 6 7 R.ch TP 4 5 L.ch TP 6 7 R.ch	AC mV meter	3738 3739 check check	0,68mV Rec/PB Level within ±1 dB of 548 mV 0,45mV Rec/PB Level within ±1 dB of 548 mV	Filter out osc with audio filter see also #4
Multiplex Filter		Record mode Inject 19kHz at line in	TP 2 left ch. TP 3 right ch	AC mV meter	5650 5651	Min. output Typ. Attenuation >40dB Min. Attenuation >30dB	
Oscillator Frequency		Record mode	TP 4 5 L.ch	Counter	5760	88kHz ±6kHz	

1 Motor must be aligned for HS before NS. H.S. ratio = 1,7

2 Dolby level to be tested in reverse direction within same tolerance.

3 Bias current must be aligned for Chrome position

4 Recording current should be aligned using an iterative method. Perform a dubbing using test tape Dolby 200 N. Wb/m as source, and Ferro tape or Chrome tape as target blank tapes. Check that the output t.p. gives 548 mV during dubbing. Then playback the recorded tape. The record/playback level should also be 548 mV ± 0.5 dB. If not, adjust 3738 (L) and 3739 (R) accordingly.

ETF3 DOLBY B - COMPONENTS

ETF3 DOLBY B - CHIPS

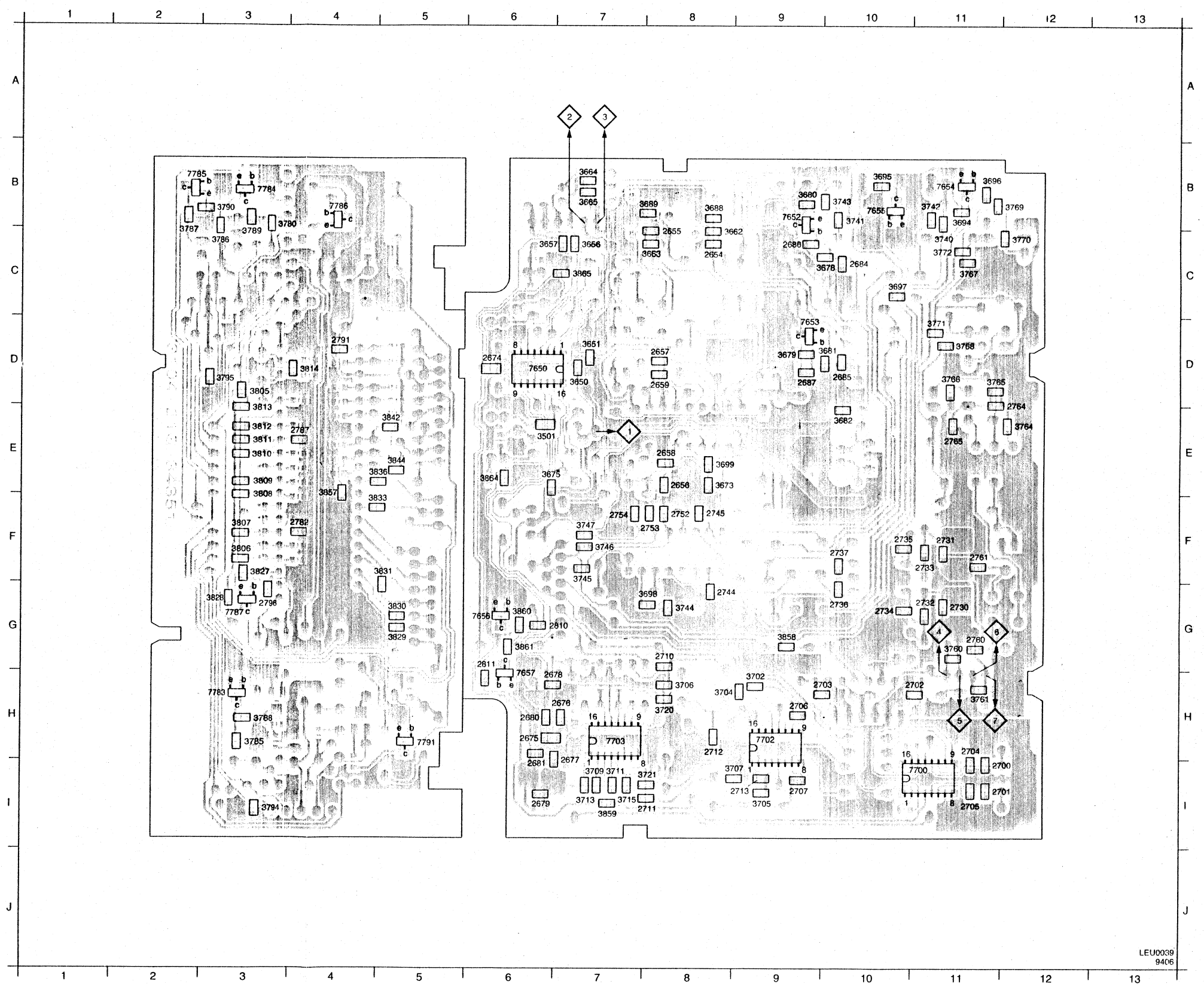
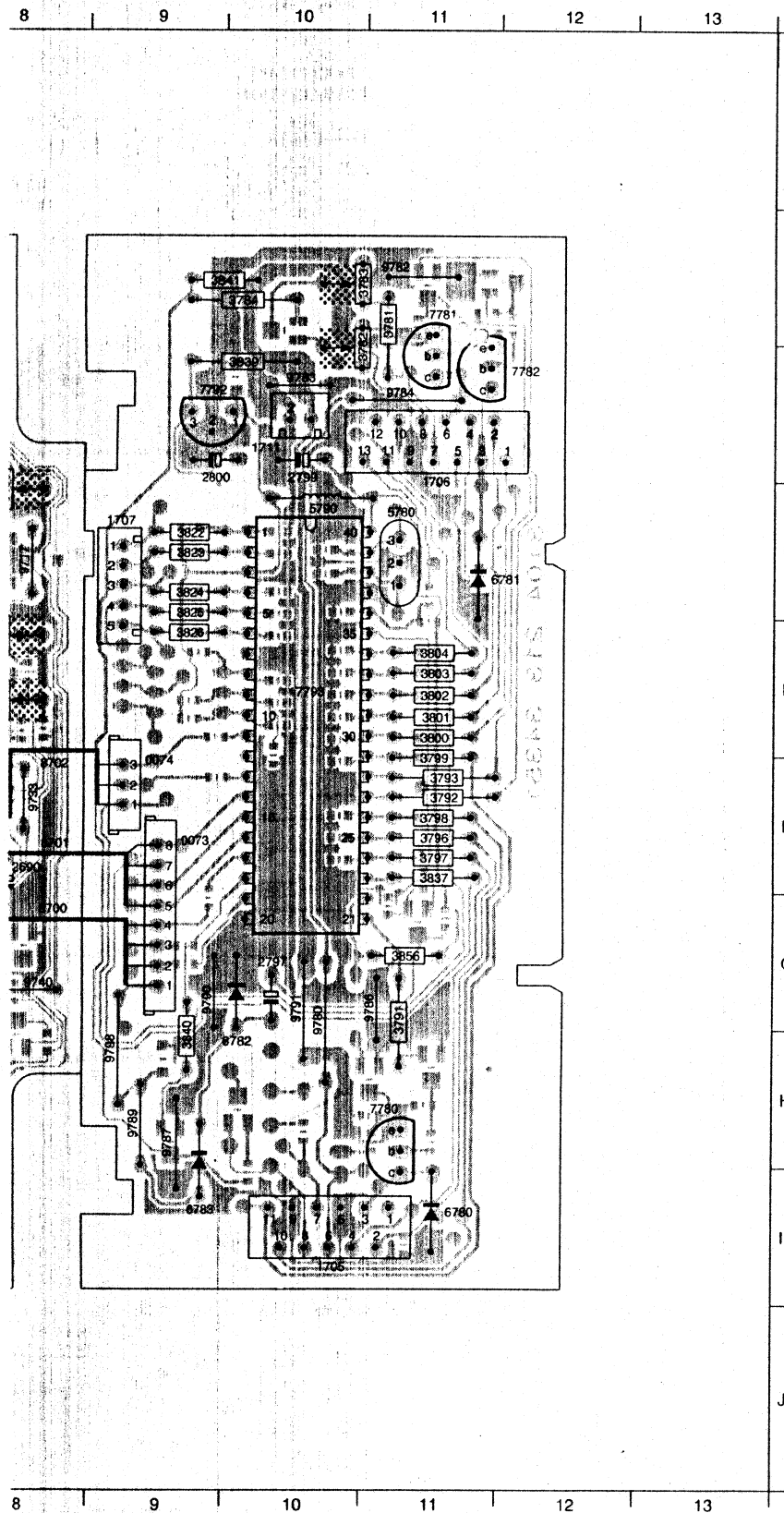
0071	F7	1707	D9	2673	E4	2716	G4	2748	C3	2799	D10	3666	B7	3723	H5	3739	B4	3791	H11	3804	E11	5650	B6	6780	I11	7763	D2	9700	I3	9712	D5	9727	F7	9782	B11
0072	E8	1711	C10	2682	C4	2717	H6	2749	B4	2800	D9	3667	B7	3724	H5	3748	E6	3792	F11	3822	D9	5651	B6	6781	D11	7764	D3	9701	I4	9715	D7	9728	G7	9783	C10
0073	F9	2650	E7	2683	D4	2718	H6	2750	G6	2808	G4	3674	E5	3730	G3	3749	F7	3793	F11	3823	D9	5652	H7	6782	H9	7765	C3	9703	G6	9716	D7	9730	E7	9784	C11
0074	F9	2651	C7	2688	C4	2738	F5	2751	G6	3652	E8	3700	I4	3731	F3	3762	G2	3796	F11	3824	D9	5653	I7	6783	I9	7780	H11	9704	H6	9717	D8	9731	E7	9786	G11
1700	H2	2652	C6	2690	F8	2739	F4	2755	E5	3653	C8	3701	I4	3732	G4	3763	G2	3797	F11	3825	D9	5730	G3	6784	G5	7781	B11	9705	H4	9718	D8	9732	E7	9787	H9
1701	H4	2653	C6	2692	B5	2740	G5	2756	E6	3654	E8	3703	I5	3733	F4	3773	F4	3798	F11	3826	E9	5731	F3	6785	E6	7782	C12	9706	H4	9719	C7	9733	F8	9789	H9
1702	F3	2660	E7	2693	C6	2741	F5	2757	G7	3655	D8	3708	H7	3734	C5	3774	C3	3799	F11	3827	F11	5760	E3	7792	C9	9707	H4	9720	C7	9734	C6	9790	G9		
1703	G2	2661	D6	2708	H6	2742	G4	2762	F2	3658	E7	3710	H7	3735	C5	3781	B11	3800	E11	3839	C10	5780	D11	7730	F6	7793	E10	9708	I7	9721	C7	9736	D6	9791	G10
1704	B8	2668	F5	2709	I6	2743	F5	2766	C2	3659	D7	3712	H7	3736	D4	3782	C11	3801	E11	3840	H9	5790	D10	7760	D3	8700	G8	9709	C5	9722	G4	9737	E5	9798	H9
1705	I10	2669	D5	2714	H6	2746	C3	2768	E3	3660	F7	3714	H7	3737	D4	3783	B11	3802	E11	3841	B9	6650	G8	7761	D3	8701	F8	9710	C5	9723	F4	9740	G8	9799	G8
1706	D11	2672	D6	2715	I6	2747	C4	2797	G10	3661	D7	3722	G4	3738	B3	3784	B10	3803	E11	3856	G11	6760	D3	7762	C2	8702	F8	9711	C5	9724	F4	9780	H10		

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ETF3 DOLBY B - CHIPS

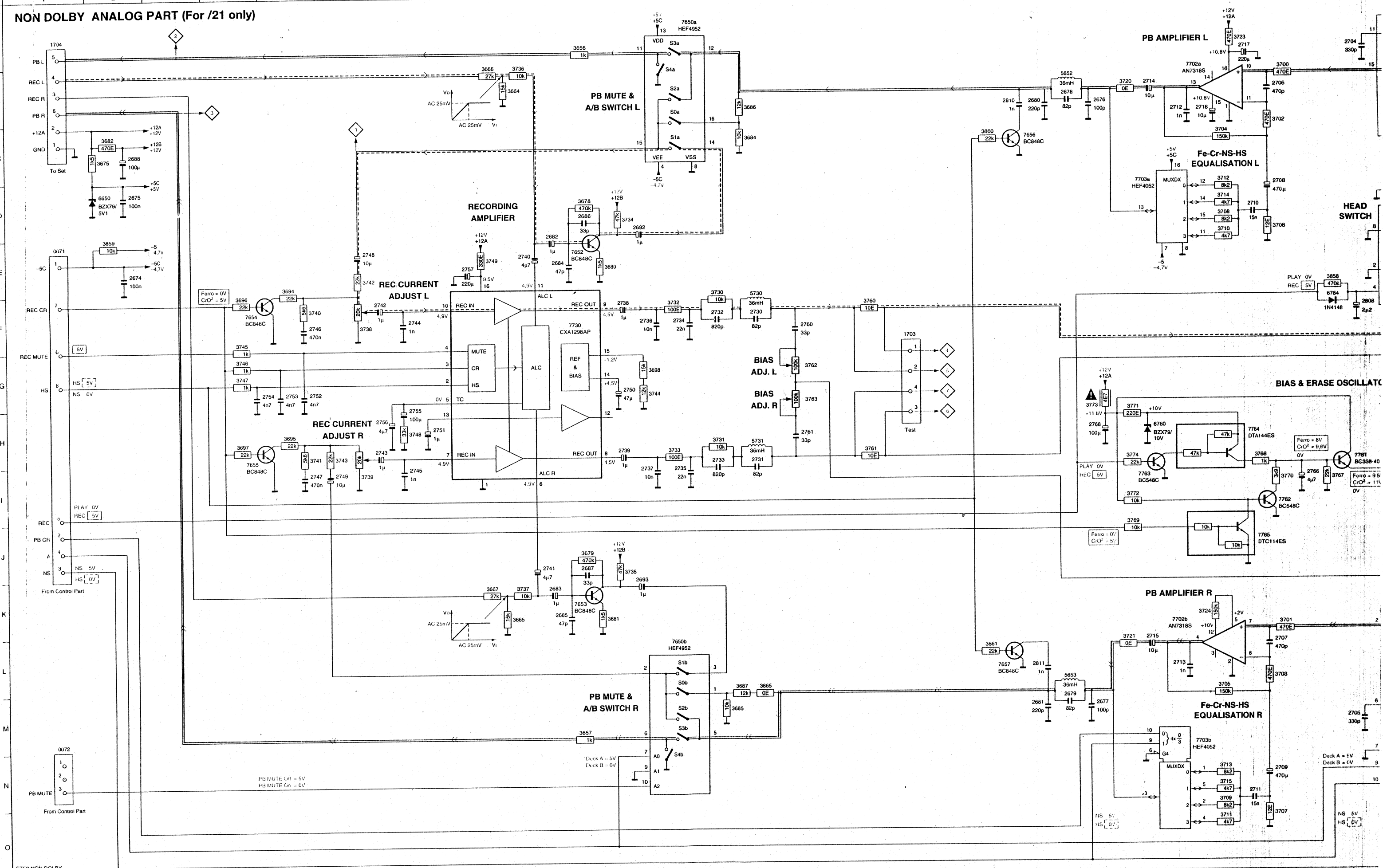
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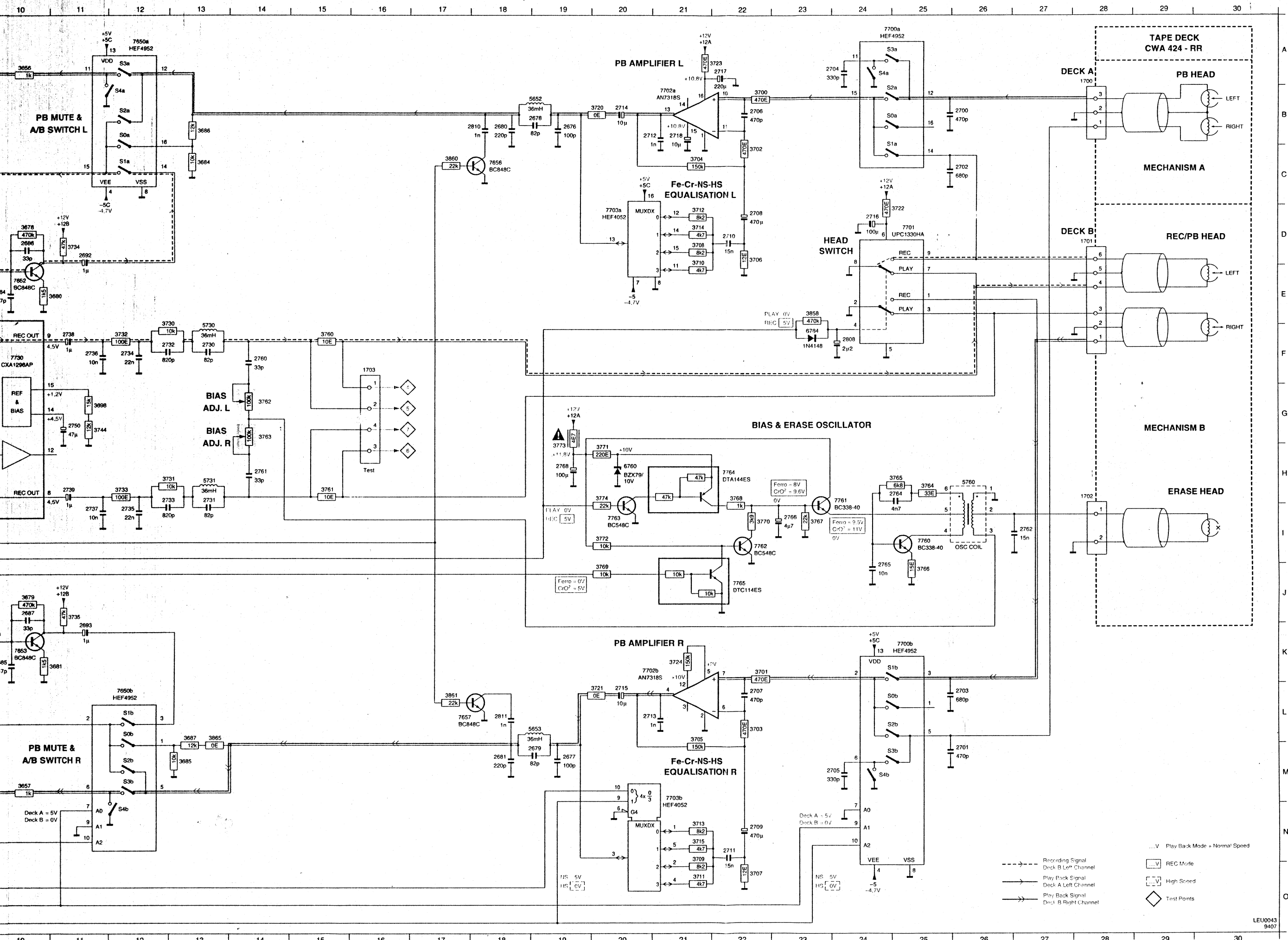
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2655	C8	2678	H6	2701	I11	2712	H8	2737	F10	2765	E11	3651	D7	3678	C9	3686	B11	3709	I7	3743	B10	3766	D11	3786	C3	3807	F3	3828	G3	3858	G9	7654	B11	7785	B2
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ON DOLBY ANALOG PART (For /21 only)

NON DOLBY ANALOG PART (For /21 only)





0071	E1	3730	F12
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1700	A28	3732	F12
1701	D28	3733	H12
1702	H28	3734	O11
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2675	D2	3738	F6
2676	B19	3739	I6
2677	M19	3740	F5
2678	B18	3741	H5
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2680	B18	3743	H6
2681	M18	3744	G11
2682	E9	3745	F4
2683	K9	3746	G4
2684	E10	3747	G4
2685	K10	3748	H7
2686	D10	3749	E8
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2688	C2	3751	H15
2692	D11	3752	G14
2693	K11	3753	G14
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2701	M26	3755	H24
2702	C26	3756	J25
2703	L26	3757	I23
2704	A23	3758	H22
2705	M23	3759	J20
2706	B22	3760	I22
2707	L22	3761	H20
2708	D22	3762	I20
2709	N22	3763	H19
2710	D22	3764	H20
2711	N22	3765	E23
2712	B20	3766	E2
2713	L20	3767	C17
2714	B20	3768	L17
2715	L20	3769	L13
2716	D24	3770	B18
2717	A22	3771	L18
2718	B21	3772	F13
2719	F13	3773	H13
2720	H13	3774	H26
2721	H12	3775	O2
2722	F12	3776	F23
2723	H12	3777	H20
2724	F12	3778	F23
2725	I12	3779	B11
2726	F11	3780	M11
2727	I11	3781	E10
2728	F11	3782	K10
2729	H11	3783	K10
2730	H11	3784	F4
2731	J9	3785	H4
2732	F6	3786	C18
2733	H6	3787	L17
2734	F7	3788	A24
2735	I7	3789	K25
2736	F5	3790	B21
2737	I5	3791	K20
2738	E6	3792	D20
2739	I6	3793	M21
2740	G11	3794	F10
2741	H8	3795	I25
2742	G5	3796	H24
2743	G5	3797	I22
2744	H7	3798	H22
2745	H7	3799	J22
2746	E8	3800	B24
2747	F14	3801	L24
2748	H14	3802	C24
2749	I27	3803	K24
2750	H24	3804	B24
2751	J24	3805	L24
2752	I23	3806	A24
2753	H19	3807	M24
2754	F24	3808	A24
2755	B17	3809	S4b
2756	L18	3810	M24
3656	A10		
3657	B9		
3658	K9		
3659	B8		
3660	K8		
3661	C2		
3662	D10		
3663	J10		
3664	E11		
3665	K11		
3666	C2		
3667	M13		
3668	B13		
3669	L13		
3670	E5		
3671	H5		
3672	F4		
3673	H4		
3674	G11		
3675	B22		
3676	B22		
3677	K22		
3678	C22		
3679	L22		
3680	C21		
3681	L21		
3682	D22		
3683	O22		
3684	D21		
3685	N21		
3686	D21		
3687	O21		
3688	N21		
3689	D21		
3690	N21		
3691	L19		
3692	D25		
3693	A21		
3694	K21		

EXPLANATION OF ABBREVIATIONS

A	Deck A or B
CRO2	Chrome
Dolby NR	Dolby Noise Reduction
Dolby Mode	Dolby Mode (Rec or Play)
DSA STR	DSA Strobe
DSA DA	DSA Data
DSA ACK	DSA Acknowledge
EOT A	End of Tape A
EOT B	End of Tape B
FE	Ferro
HS	High Speed
MODE A	Slide Deck A Up / Down
MODE B	Slide Deck B Up / Down
NC	Not Connect
NS	Normal Speed
PB CR	Playback Chrome
PB mute	Playback mute
PB Lever ADJ L	Playback Lever Adjustment Left
PB CR	Playback Chrome
PB mute	Playback mute
PB Lever ADJ R	Playback Lever Adjustment Right
PBL	Playback Left
PBR	Playback Right
Rec Mute	Recording Mute
Rec R	Recording Right
Rec L	Recording Left
Rec CR	Recording Chrome
REC RVS	Recording Reverse
REC	Recording
REC FWD	Recording Forward
SOL A	Solenoid A
SOL B	Solenoid B
VCC B	VCC Motor B

SERVICE SOLUTION for RIF INTERFERENCE

Re-adjust oscillator coil 5760 (half a turn)
so that the interference is gone.

ELECTRICAL MEASUREMENTS AND ADJUSTMENTS

Adjustment	Cassette	Recorder in position	Measure on	Read on	Adjust with	Value	Remarks
Deck A High Speed HS	SBC419 3150Hz	High Speed dubbing	Test point TP 1	Counter	3782	5,4kHz ±0,5%	see #1
Deck A Norm.Speed NS	SBC419 3150Hz	Play in forward direction	Test point TP 2	Counter	3783	3,15 kHz ±0,5%	
Wow and Flutter	SBC419 3150Hz	Play in forward direction	Test point TP 2	Wow and Flutter meter	check	< 0,4%	
Deck A Azimuth	SBC 419 12kHz	Play in forward direction	TP 2 left ch	AC mV meter	Left screw Norm.Dir.(>)	max. output left=right	
		Play in reverce direction	or TP 3 right ch		Right screw Rev.Dir.()		
Deck B Azimuth	SBC 419 12kHz	Play in forward direction	TP 2 left ch	AC mV meter	Left screw Norm.Dir.(>)	max. output left=right	
		Play in reverce direction	or TP 3 right ch		Right screw Rev.Dir.()		
Bias current Chrome	-	Record mode and Chrome mode	TP 4 5 L.ch	AC mV meter	3762	7 mV	see #2
			TP 6 7 R.ch		3763		
Bias current Ferro	-	Record mode and Ferro mode	TP 4 5 L.ch	AC mV meter	check	4,4mV ±0,5dB	
			TP 6 7 R.ch		check		
Recording current	Dolby 200N Wb/m (deck A) and Chrome.cass (deck B)	Record mode and Chrome mode	TP 4 5 L.ch	AC mV meter	3738	0,68mV	Filter out osc with audio filter see also #3
			TP 6 7 R.ch		3739	Rec/PB Level within ±1 dB of 548 mV	
	Dolby 200N Wb/m (deck A) and Ferro.cass (deck B)	Record mode and Ferro mode	TP 4 5 L.ch		check	0,45mV	
			TP 6 7 R.ch		check	Rec/PB Level within ±1 dB of 548 mV	
Oscillator Frequency		Record mode	TP 4 5 L.ch	Counter	5760	88kHz ±6kHz	

#1 Motor must be aligned for HS before NS. H.S. ratio = 1,7

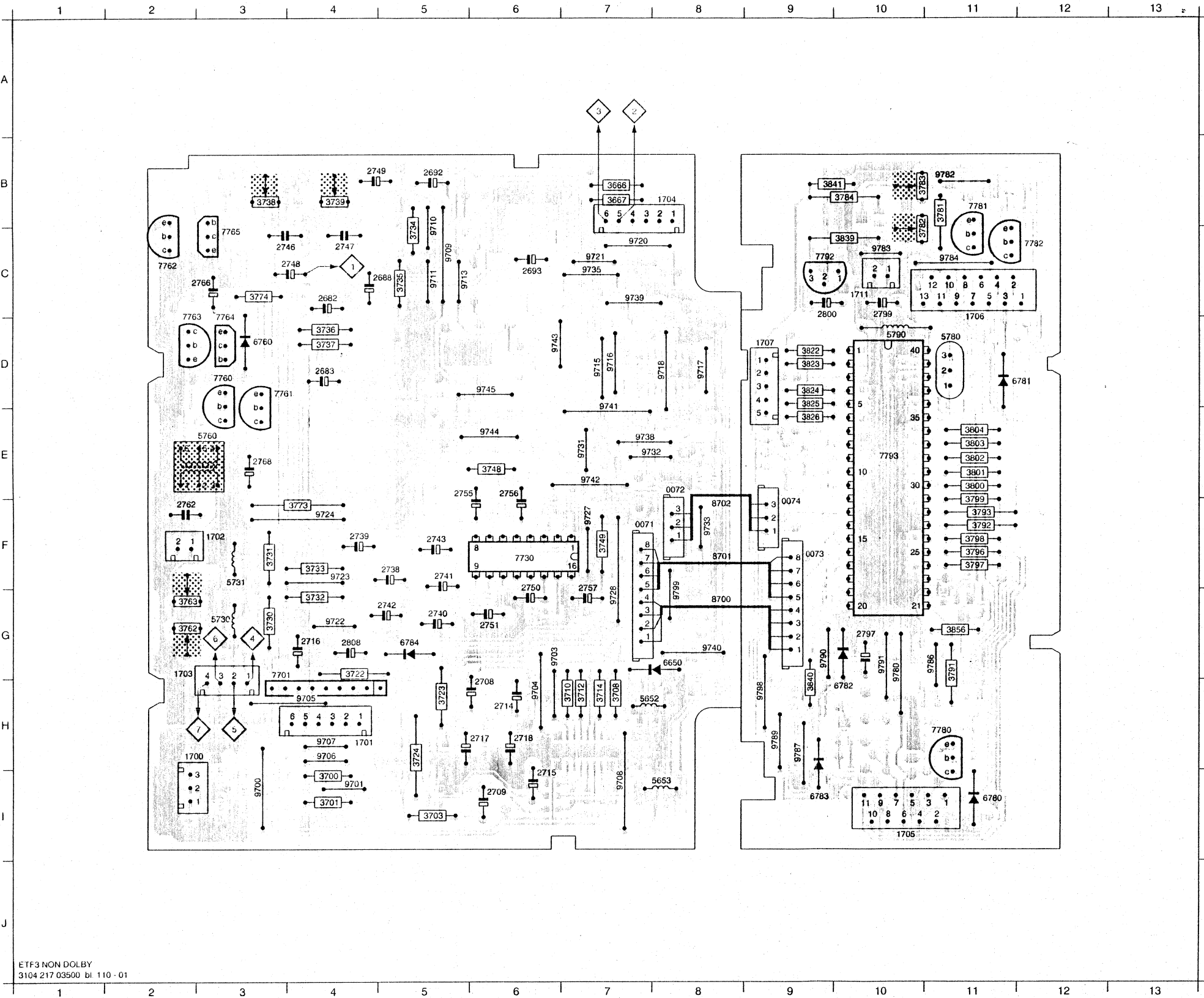
#2 Bias current must be aligned for Chrome position.

#3 Recording current should be aligned using an iterative method. Perform a dubbing using test tape Dolby 200 N. Wb/m as source, and Ferro tape or Chrome tape as target blank tapes. Check that the output t.p. gives 548 mV during dubbing. Then playback the recorded tape. The record/playback level should also be 548 mV ± 0.5 dB. If not, adjust 3738 (L) and 3739 (R) accordingly.

ETF3 NON-DOLBY - COMPONENTS

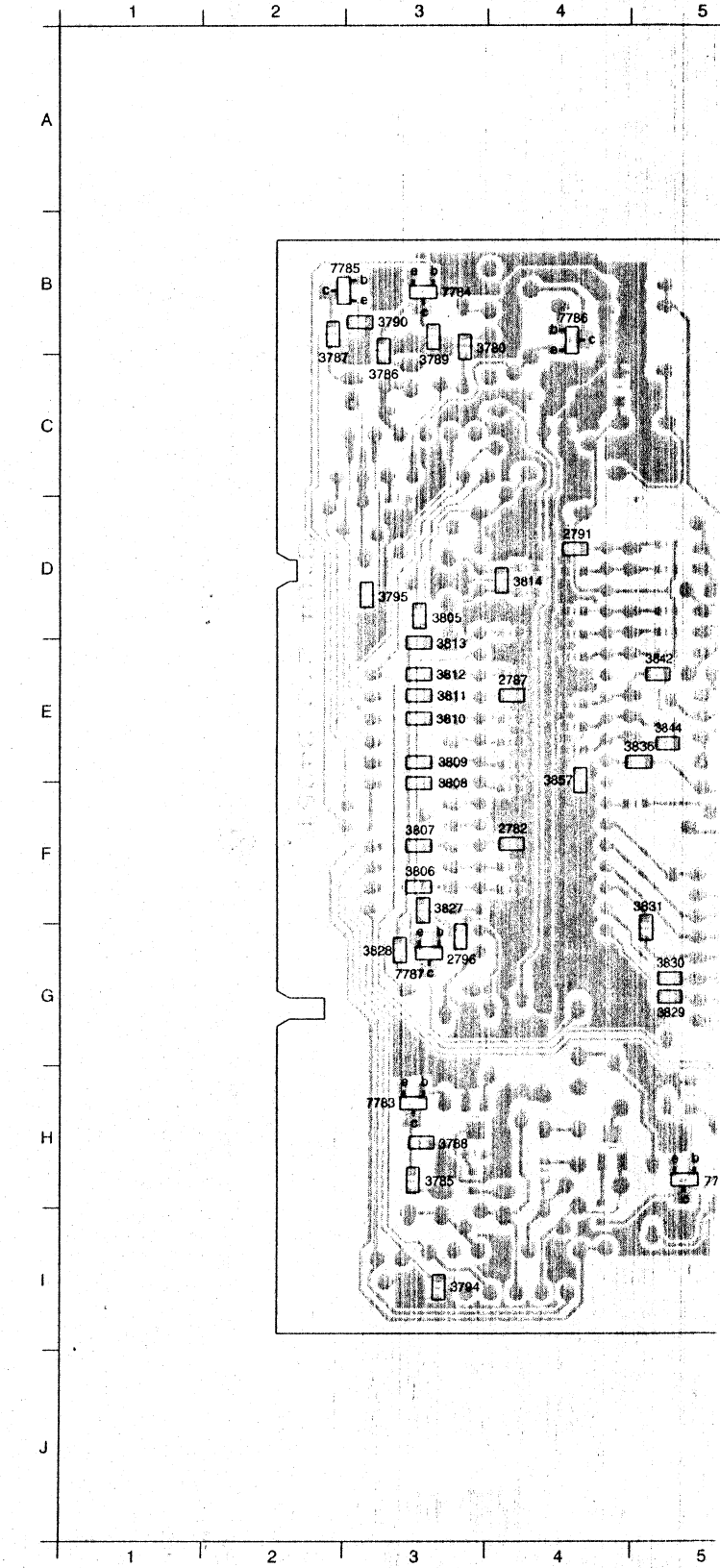
ETF3 NON-DOLBY - CHIPS

0071	F7	1706	D11	2714	H6	2743	F5	2762	F2	3701	I4	3731	F3	3749	F7	3792	F11	3804	E11	5652	H7	6781	D11	7764	D3	9700	I3	9711	C5	9724	F4	9741	E7	9767	H9
0072	E8	1707	D9	2715	I6	2746	C3	2766	C2	3703	I5	3732	G4	3762	G2	3793	F11	3822	D9	5653	I7	6782	H9	7765	C3	9701	I4	9713	C5	9727	F7	9742	E7	9769	H9
0073	F9	1711	C10	2716	G4	2747	C4	2768	E3	3708	H7	3733	F4	3763	G2	3796	F11	3823	D9	5730	G3	6783	I9	7780	H11	9703	G6	9715	D7	9728	G7	9743	D6	9790	G8
0074	F9	2682	C4	2717	H6	2748	C3	2797	G10	3710	H7	3734	C5	3773	F4	3797	F11	3824	D9	5731	F3	6784	G5	7781	B11	9704	H6	9716	D7	9731	E7	9744	E6	9791	G10
1700	H2	2683	D4	2718	H6	2749	B4	2799	D10	3712	H7	3735	C5	3774	C3	3798	F11	3825	D9	5760	E3	7701	G3	7782	C12	9705	H4	9717	D8	9732	E7	9745	D6	9799	G8
1701	H4	2688	C4	2738	F5	2750	G6	2800	D9	3714	H7	3736	D4	3781	B11	3799	F11	3826	E9	5780	D11	7730	F6	7792	C9	9706	H4	9718	D8	9733	F8	9780	H10		
1702	F3	2692	B5	2739	F4	2751	G6	2808	G4	3722	G4	3737	D4	3782	C11	3800	E11	3839	C10	5790	D10	7760	D3	7793	E10	9707	H4	9720	C7	9735	C7	9782	B11		
1703	G2	2693	C6	2740	G5	2755	E5	3666	B7	3723	H5	3738	B3	3783	B11	3801	E11	3840	H9	6650	G8	7761	D3	8700	G8	9708	I7	9721	C7	9738	E7	9783	C10		
1704	B8	2708	H6	2741	F5	2756	E6	3667	B7	3724	H5	3739	B4	3784	B10	3802	E11	3841	B9	6760	D3	7762	C2	8701	F8	9709	C5	9722	G4	9739	C7	9784	C11		
1705	I10	2709	I6	2742	G4	2757	G7	3700	I4	3730	G3	3748	E6	3791	H11	3803	E11	3856	G11	6780	I11	7763	D2	8702	F8	9710	C5	9723	F4	9740	G6	9786	G11		



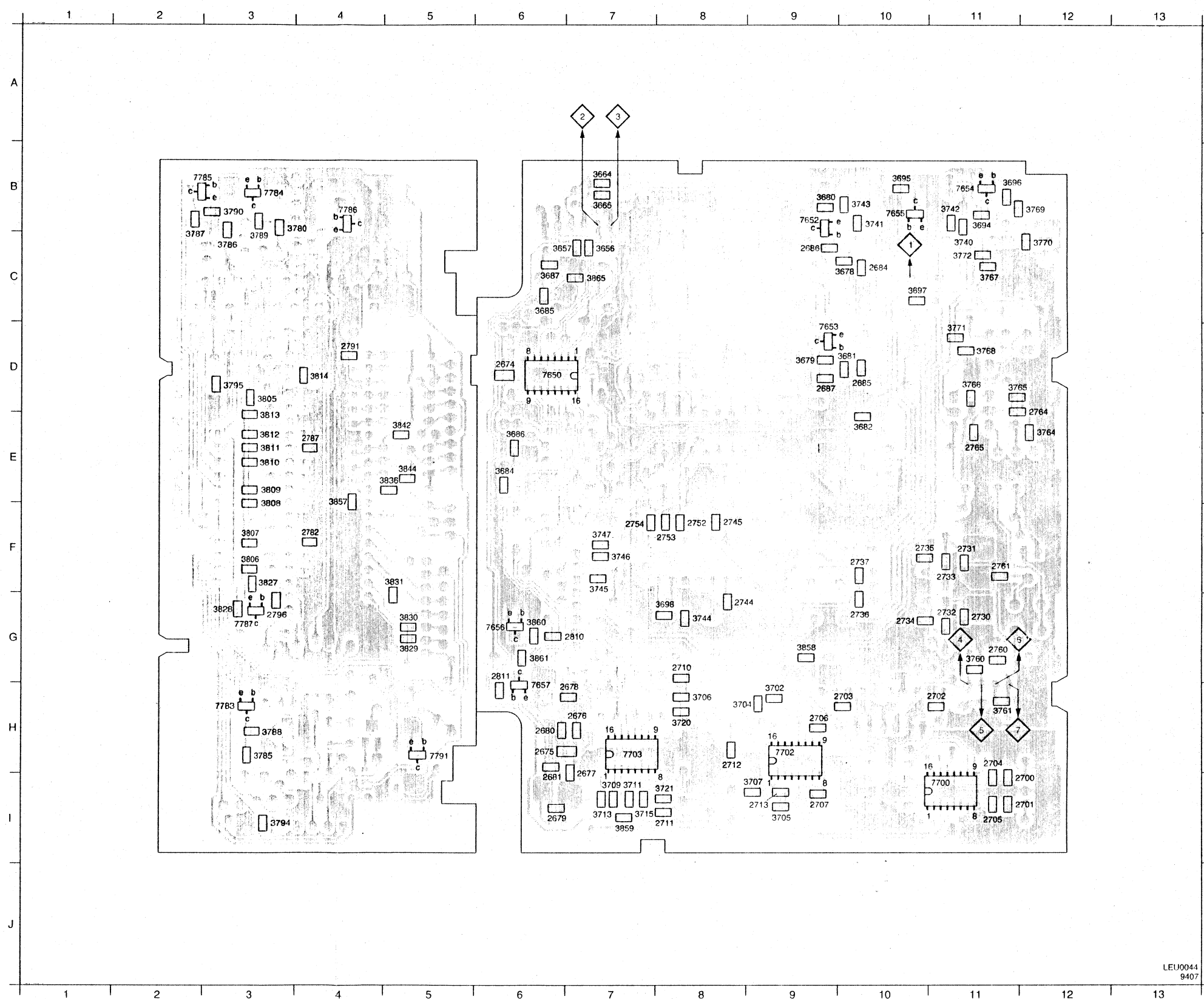
ETF3 NON DOLBY
3104 217 03500 bl. 110 - 01

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2675	H6	2685	D10	2705	I11	2731	F11	2745	F8	2782	F4	3664	E
2676	H7	2686	C9	2706	H9	2732	G11	2752	F8	2787	E4	3665	E
2677	I7	2687	D9	2707	I9	2733	F11	2753	F8	2791	D4	3678	C
2678	H6	2700	I11	2710	G8	2734	G10	2754	F7	2796	G3	3679	C
2679	I6	2701	I11	2711	I7	2735	F10	2760	G11	2810	G6	3680	E
2680	H6	2702	H10	2712	H8	2736	F10	2761	F11	2811	G6	3681	C
2681	I6	2703	H9	2713	I9	2737	F10	2764	E12	3656	C7	3682	E



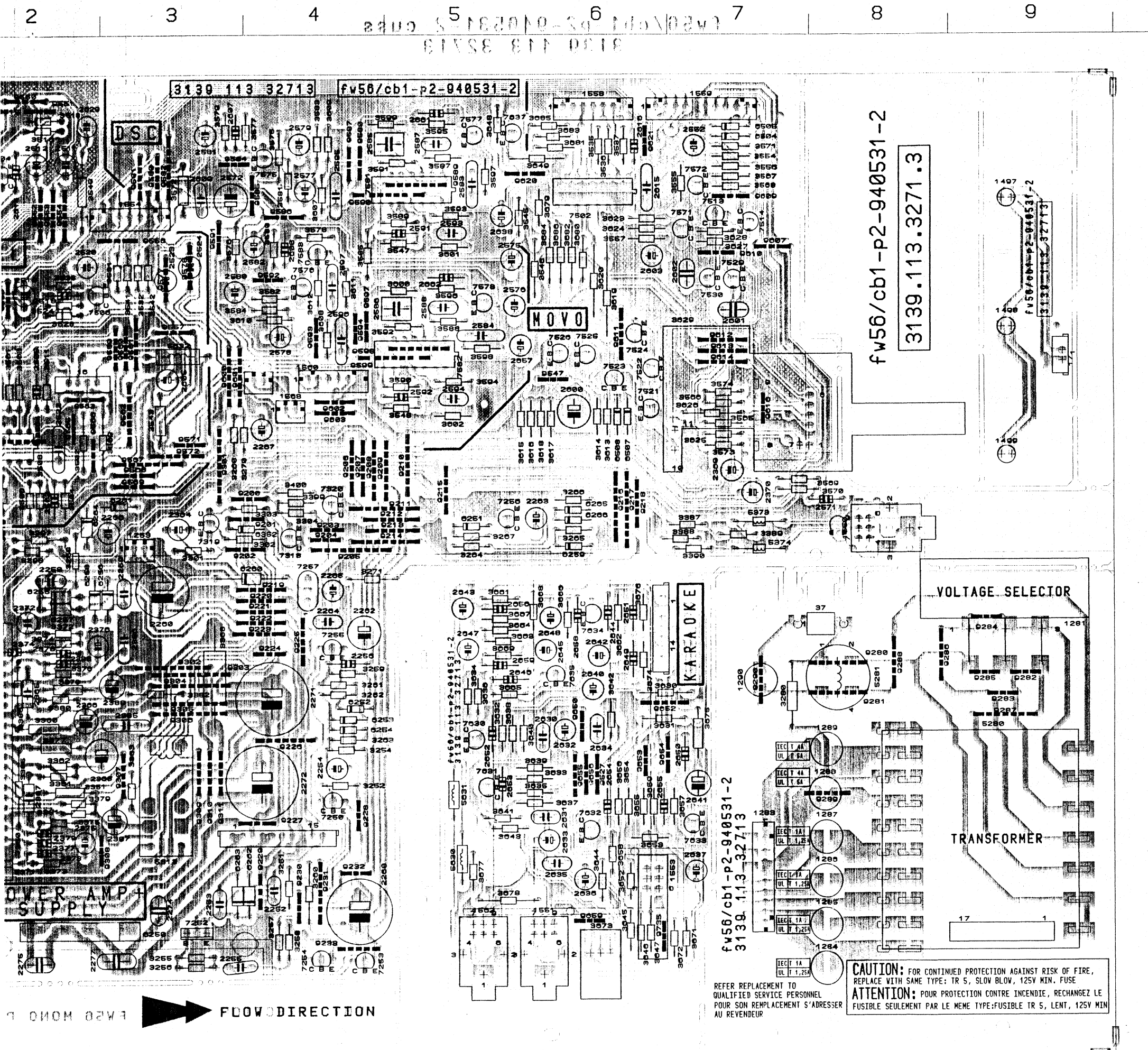
ETF3 NON-DOLBY - CHIPS

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2675	H6	2685	D10	2705	I11	2731	F11	2745	F8	2782	F4	3664	B7	3685	C6	3702	H9	3715	I7	3745	F7	3767	C11	3786	C3	3806	F3	3814	D4	3844	E5	7652	B9	7703	H7
2676	H7	2686	C9	2706	H9	2732	G11	2752	F8	2787	E4	3665	B7	3686	E6	3704	H8	3720	H8	3746	F7	3768	D11	3787	C2	3807	F3	3827	F3	3857	F4	7653	D9	7783	H3
2677	I7	2687	D9	2707	I9	2733	F11	2753	F8	2791	D4	3678	C9	3687	C6	3705	I9	3721	I7	3747	F7	3769	B12	3788	H3	3808	F3	3828	G3	3858	G9	7654	B11	7784	B3
2678	H6	2700	I11	2710	G8	2734	G10	2754	F7	2796	G3	3679	D9	3694	B11	3706	H8	3740	C11	3760	G11	3770	C12	3789	C3	3809	E3	3829	G5	3859	I7	7655	B10	7785	B2
2679	I6	2701	I11	2711	I7	2735	F10	2760	G11	2810	G6	3680	B9	3695	B10	3707	I8	3741	B10	3761	H11	3771	D11	3790	B3	3810	E3	3830	G5	3860	G6	7656	G6	7786	B4
2680	H6	2702	H10	2712	H8	2736	G10	2761	F11	2811	G6	3681	D9	3696	B11	3709	I7	3742	B11	3764	E12	3772	C11	3794	I3	3811	E3	3831	F5	3861	G6	7657	H6	7787	G3
2681	I6	2703	H9	2713	I9	2737	F10	2764	E12	3656	C7	3682	E10	3697	C10	3717	I7	3743	B10	3765	D11	3780	B3	3795	D3	3812	E3	3836	E4	3865	C7	7700	I11	7791	H4



1 2 3 4 5 6 7 8

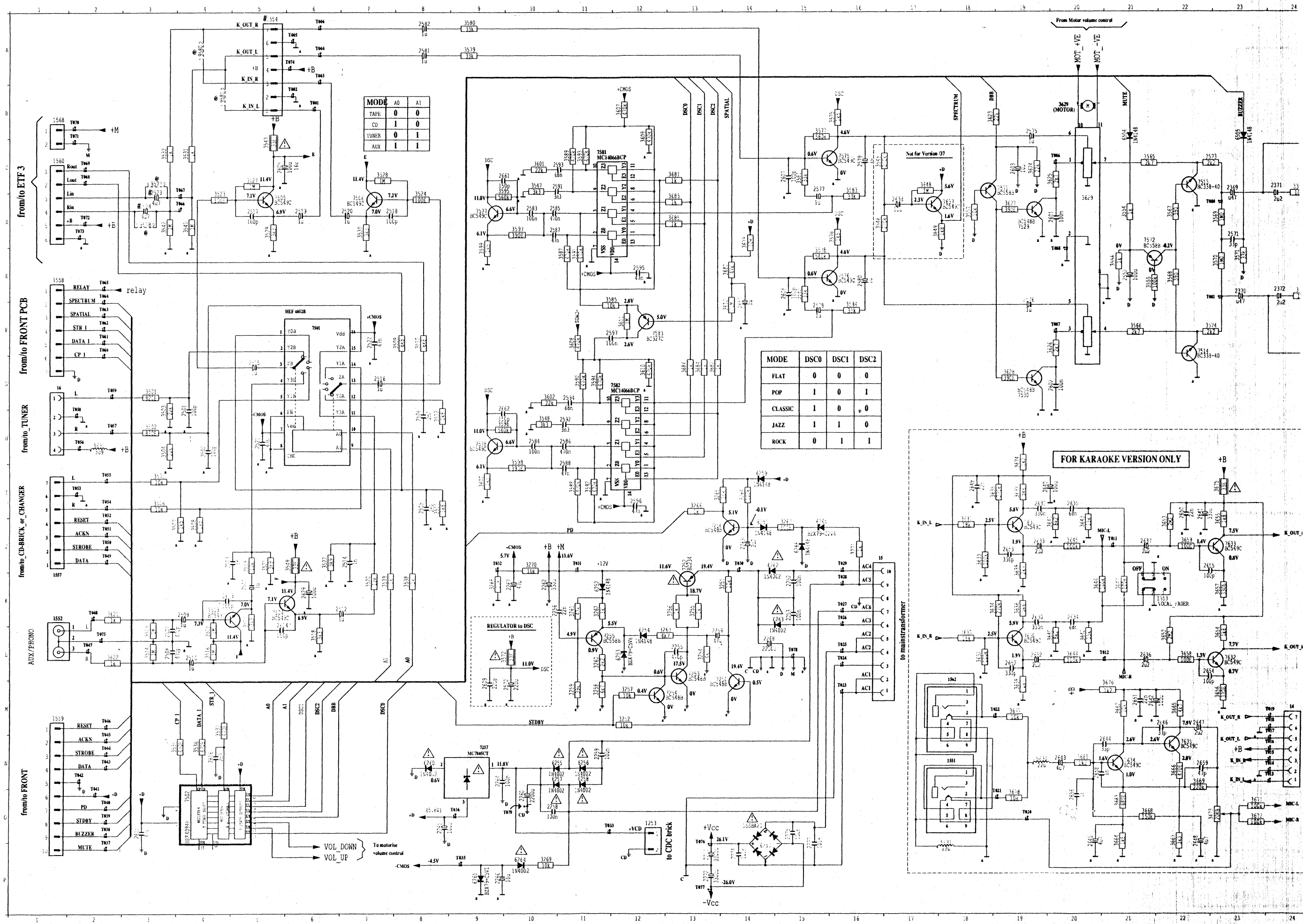


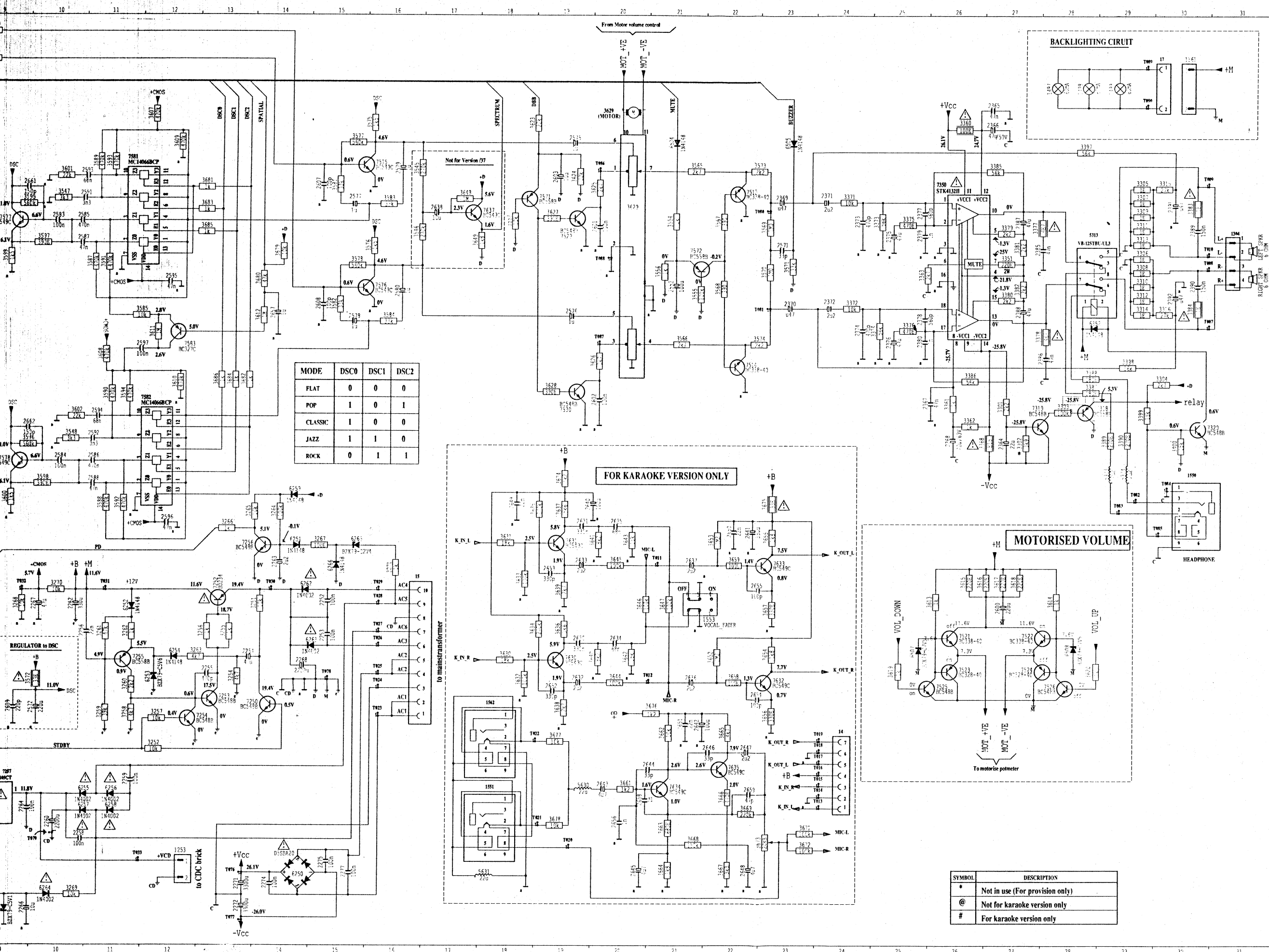


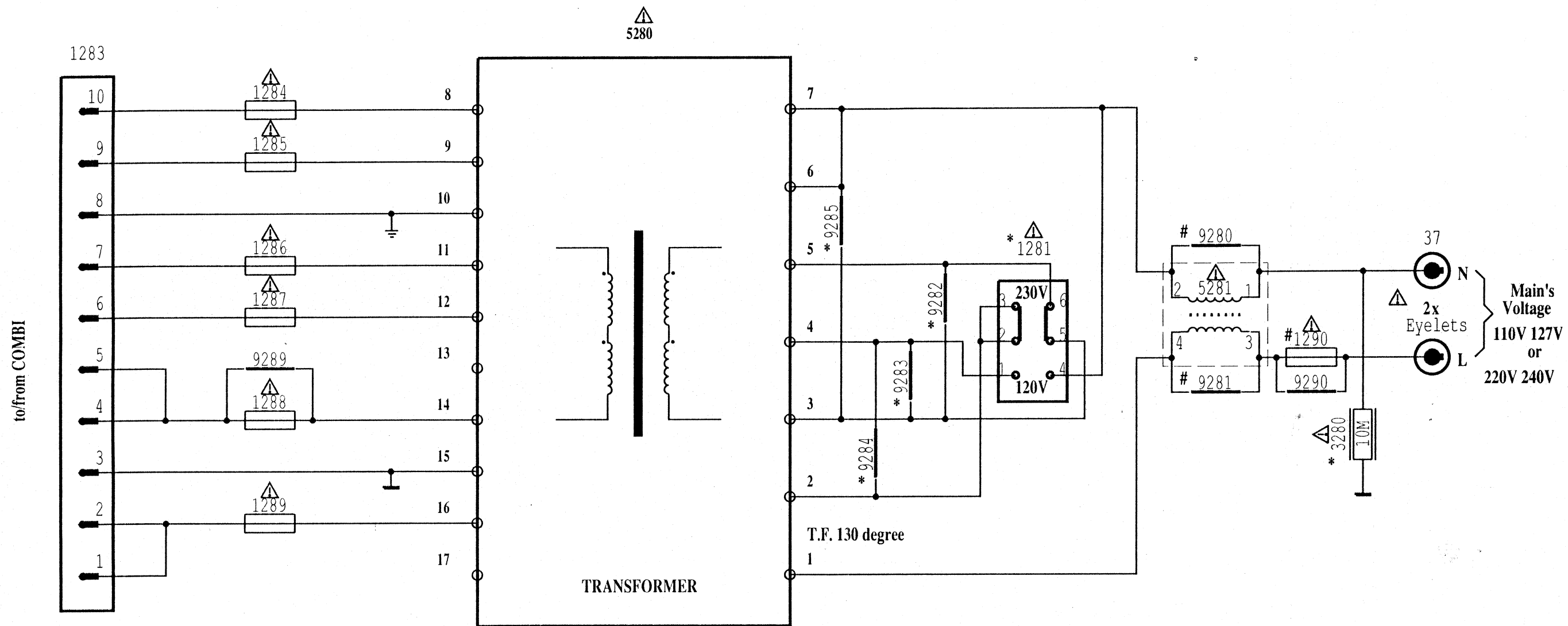
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16 B 2	2524 A 3	3306 F 1	3572 A 3	3676 D 6	9212 C 5	9609 A 7
17 B 9	2552 A 7	3307 D 1	3573 C 7	3677 F 5	9213 C 5	9610 A 7
37 D 8	2571 C 8	3308 F 1	3574 B 7	3678 F 5	9214 C 5	9611 B 6
1253 C 3	2572 A 3	3309 D 1	3575 A 4	3679 A 6	9215 C 5	9612 B 7
1281 D 9	2575 A 5	3310 F 1	3576 A 3	3680 A 6	9216 C 6	9613 B 7
1293 F 7	2576 B 5	3311 D 1	3577 A 4	3681 A 6	9217 C 6	9614 B 7
1284 F 8	2577 A 4	3312 F 1	3578 A 4	3682 A 6	9218 C 6	9616 B 7
1285 F 8	2578 B 4	3313 D 1	3579 A 3	3683 A 6	9219 D 4	9620 A 5
1286 F 8	2579 A 4	3314 F 1	3580 A 4	3684 A 6	9220 D 4	9621 A 6
1287 E 8	2580 B 3	3315 C 2	3581 A 4	3685 A 6	9221 D 4	9650 E 6
1288 E 8	2581 A 3	3316 D 1	3582 B 4	3686 A 6	9222 D 4	9652 D 6
1289 E 8	2582 A 4	3351 E 2	3583 A 4	5280 F 9	9223 D 4	9653 E 6
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2252 F 4	2605 B 3	3383 E 1	3602 B 5	6260 D 4	9286 D 8	
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2254 E 4	2608 A 4	3385 E 2	3608 B 4	6262 F 4	9288 D 8	
2255 F 3	2609 A 3	3386 D 2	3609 A 4	6263 F 3	9289 E 8	
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LETE FOR ALL VERSIONS/OPTIONS
ASE REFER TO SCHEMATIC DIAGRAM

COMBI CIRCUIT I







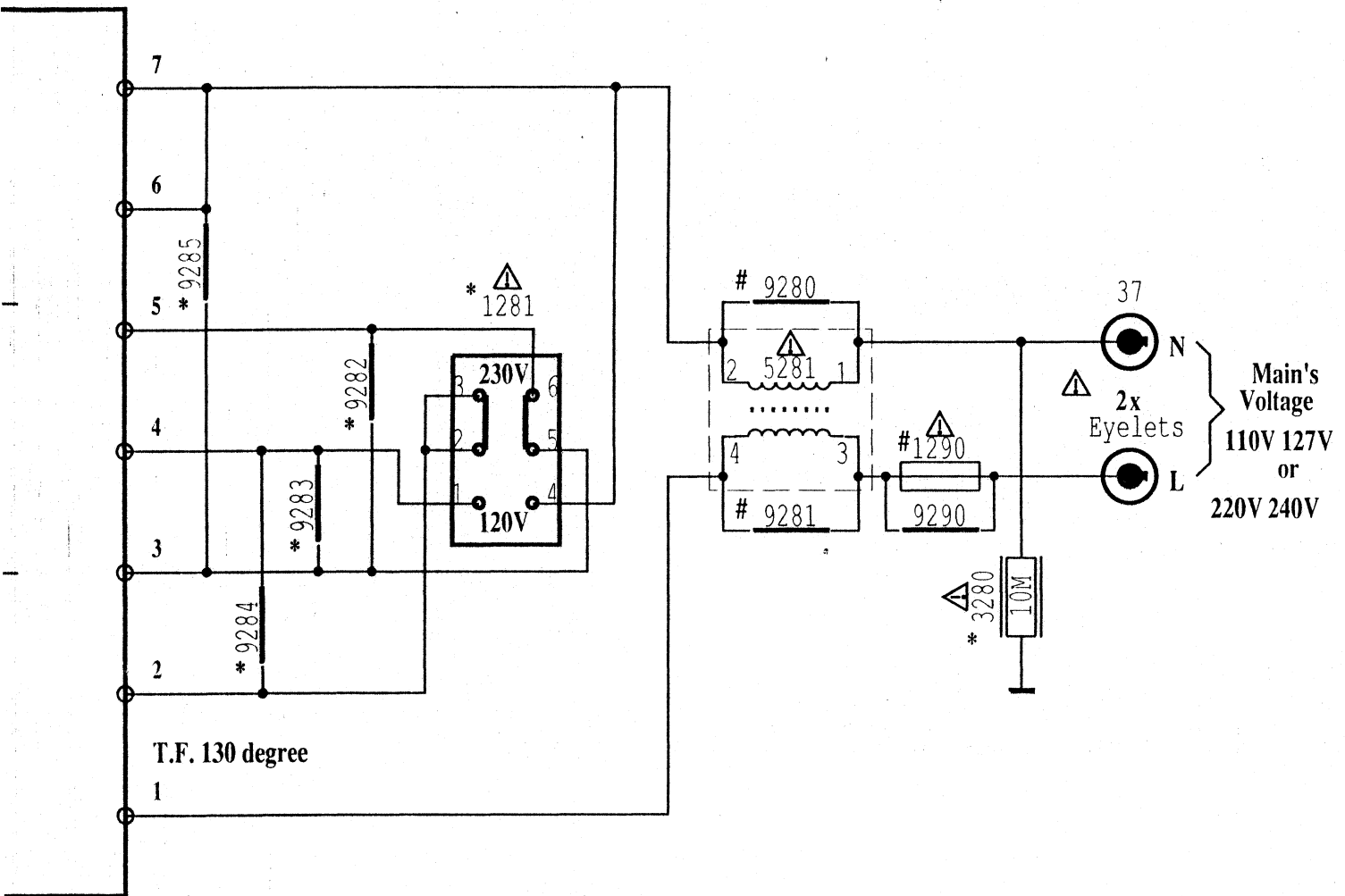
#9280, #9281 PROVISION FOR CHOKE REPLACEMENT

NOTE FOR ITEMS MARKED *

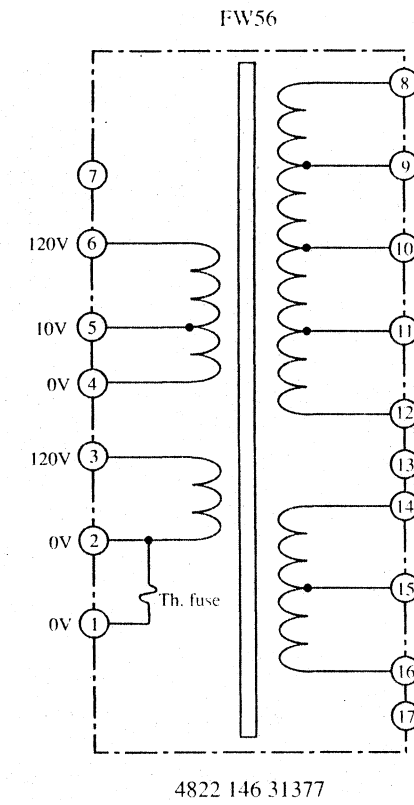
ITEM	VOLTAGE			
	230V	120V/ 230V	240V	120V
1281	-	FW56	-	-
9282	FW56	-	-	-
9283	-	-	FW56	-
9284	-	-	-	FW56
9285	-	-	-	FW56
3280	-	-	-	FW56
1290	-	-	-	FW56

	FW56	
	all versions except /37	for /37 only
1284	1A	1.25A
1285	1A	1.25A
1286	1A	1.25A
1287	1A	1.25A
1288	4A	5.00A
1289	4A	5.00A

TRANSFORMING WINDING



#9280, #9281 PROVISION FOR CHOKE REPLACEMENT

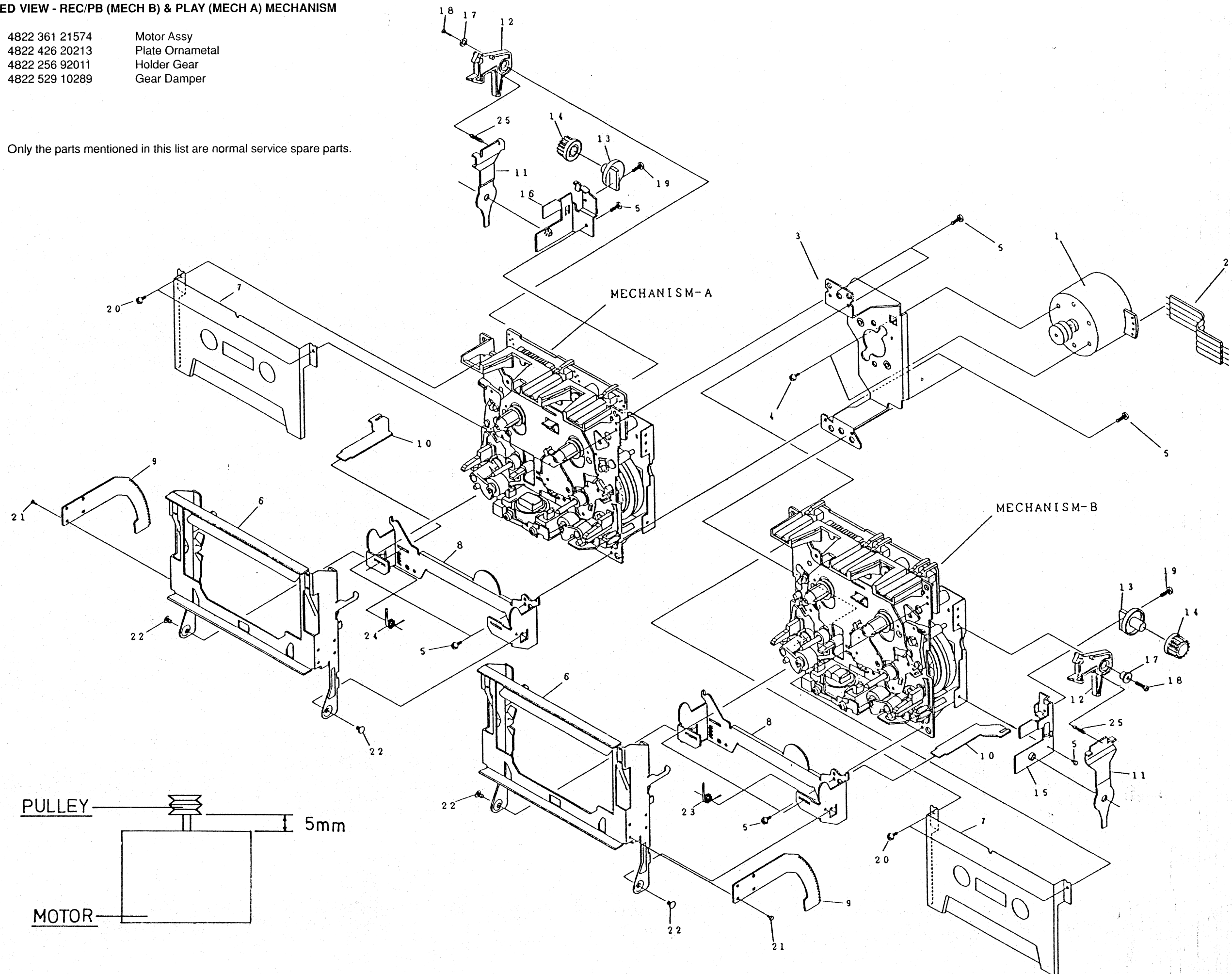


56
for /37 only
1.25A
1.25A
1.25A
1.25A
5.00A
5.00A

EXPLODED VIEW - REC/PB (MECH B) & PLAY (MECH A) MECHANISM

1	4822 361 21574	Motor Assy
7	4822 426 20213	Plate Ornametal
13	4822 256 92011	Holder Gear
14	4822 529 10289	Gear Damper

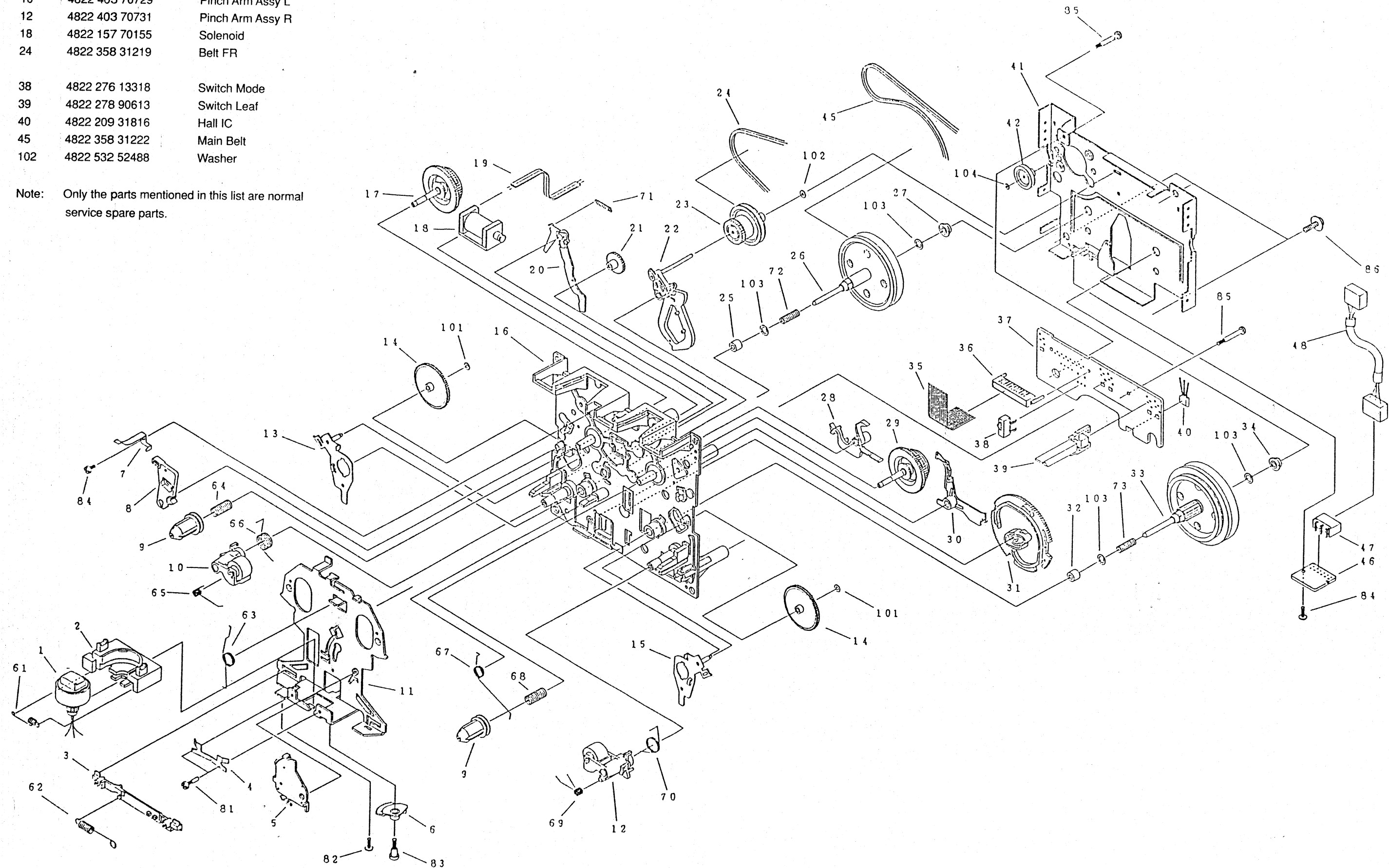
Note: Only the parts mentioned in this list are normal service spare parts.



EXPLODED VIEW - PLAY (MECH A) MECHANISM

1	4822 249 30189	Play Head Assy
10	4822 403 70729	Pinch Arm Assy L
12	4822 403 70731	Pinch Arm Assy R
18	4822 157 70155	Solenoid
24	4822 358 31219	Belt FR
38	4822 276 13318	Switch Mode
39	4822 278 90613	Switch Leaf
40	4822 209 31816	Hall IC
45	4822 358 31222	Main Belt
102	4822 532 52488	Washer

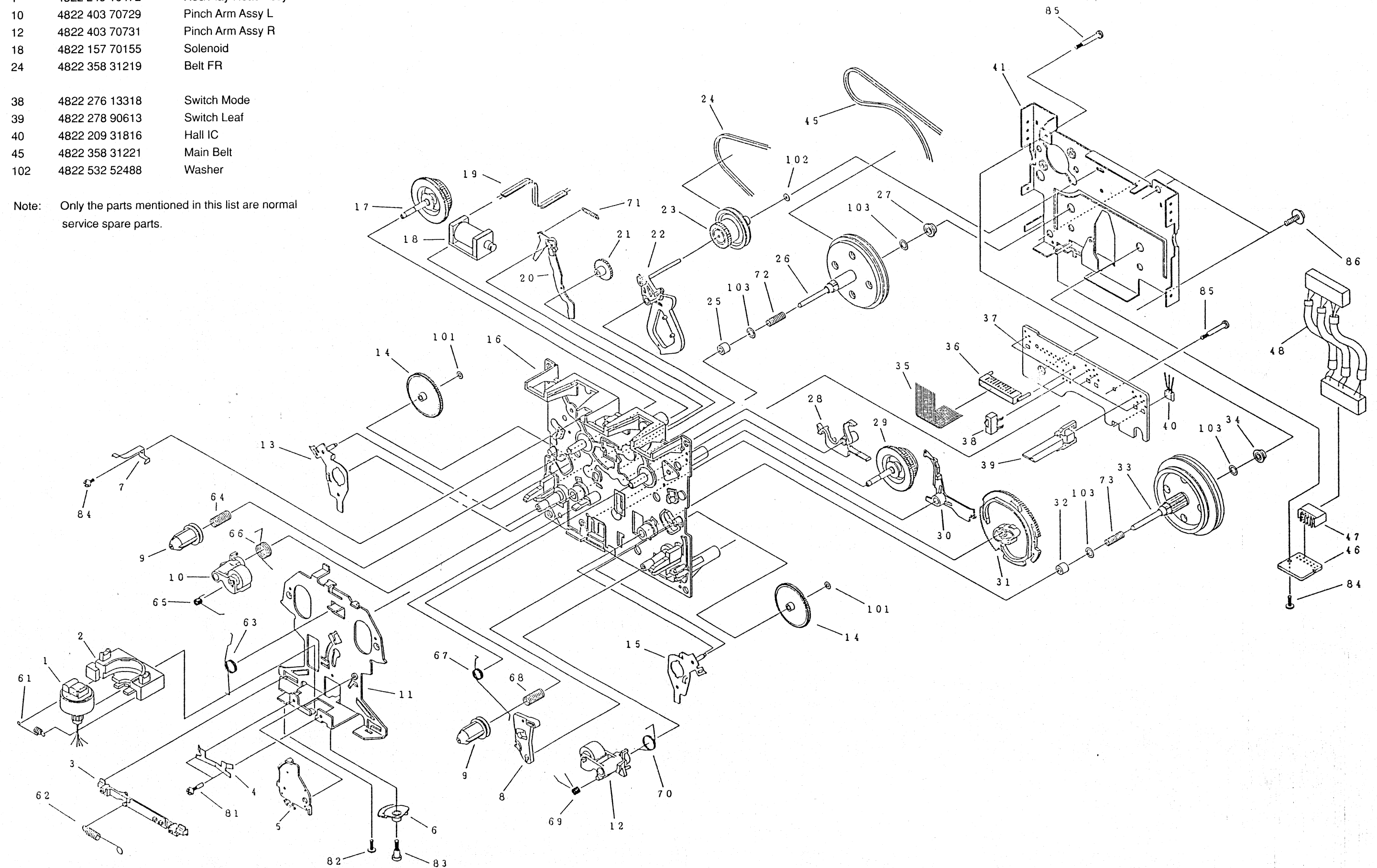
Note: Only the parts mentioned in this list are normal service spare parts.



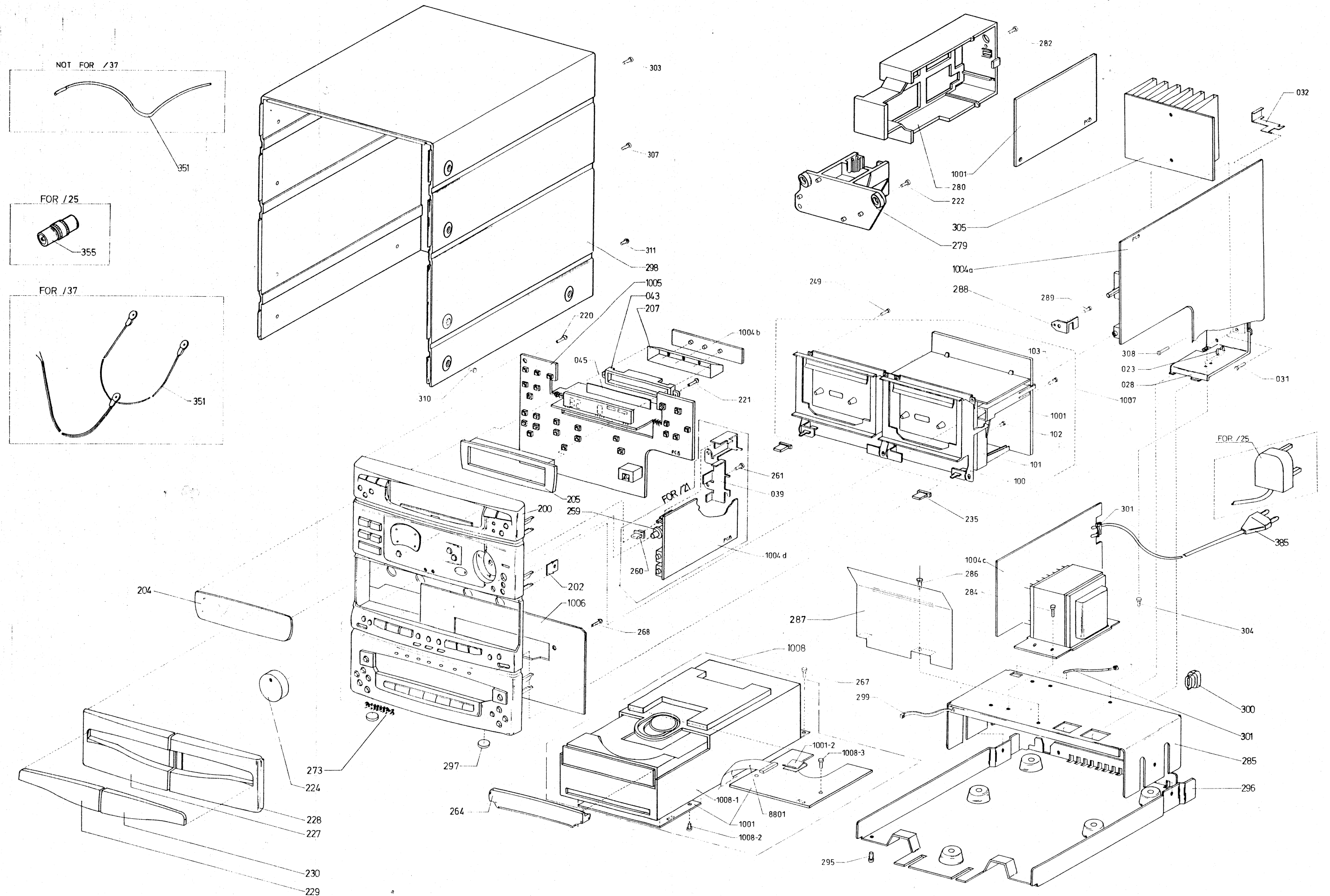
EXPLODED VIEW - REC/PB (MECH B) MECHANISM

1	4822 249 10472	Rec/Play Head Assy
10	4822 403 70729	Pinch Arm Assy L
12	4822 403 70731	Pinch Arm Assy R
18	4822 157 70155	Solenoid
24	4822 358 31219	Belt FR
38	4822 276 13318	Switch Mode
39	4822 278 90613	Switch Leaf
40	4822 209 31816	Hall IC
45	4822 358 31221	Main Belt
102	4822 532 52488	Washer

Note: Only the parts mentioned in this list are normal service spare parts.



EXPLODED VIEW - CENTER UNIT



SCREW LIST - MAIN UNIT

031	D2.9 X 13
220	D3 X 10
221	D3 X 10
222	D3 X 10
249	D3 X 10
261	D3 X 10
267	M3 X 6
268	D3 X 8
281	D3 X 10
282	D3 X 10
284	M3 X 6
286	M3 X 6
289	D3 X 8
295	M3 X 6
302	D3 X 10
303	D3 X 10
304	D3 X 6
306	D3 X 10
307	D3 X 10
308	D2.9 X 13
310	M3 X 6
311	M3 X 6
312	M3 X 6

MECHANICAL AND ACCESSORY PARTS - SET EXPLODED VIEW

023	4822 255 40128	Clip 56353
100	4822 691 20928	Tape Deck assy CWA42RR
200	4822 426 51751	Cabinet front assy for /21/30
200	4822 426 51753	Cabinet front assy for /37
200	4822 426 51752	Cabinet front assy for /20/22/25
204	4822 450 62199	Window feature assy
204	4822 450 62187	Window feature assy for /37
224	4822 413 51467	Knob volume assy
227	4822 443 64127	Cover cass door L
228	4822 443 64128	Cover cass door R for /20/22/25
228	4822 443 64129	Cover cass door R for /21/30/37
229	4822 450 62185	Window cover L
230	4822 450 62186	Window cover R
235	4822 410 63091	Button eject deck
259	4822 413 41841	Knob karaoke for /21/30
260	4822 413 41842	Knob vocal cancel for /21/30
264	4822 444 60982	Cover CDC door
273	4822 459 11086	Badge PHILIPS
297	4822 462 40683	Plate foot
298	4822 426 20253	Cabinet rear for /20/22/25/37
298	4822 426 20254	Cabinet rear for /21/30
300	4822 532 60948	Bush mains
350	4822 445 10404	Loudspeaker box assy
351	4822 303 50063	FM aerial
351	4822 320 11094	FM antenna wire for /37 only
355	4822 263 21071	Adaptor FEM/FEM for /25 only
356	4822 218 10536	Remote control RH6829/00
385	4822 321 10853	Mains cord IEC for /20/22/21
385	4822 321 10941	Mains cord UK for /25
385	4822 321 10906	Mains cord ULfor /37
385	4822 321 10979	Mains cord Aust for /30
387	4822 736 22096	IFU - Europe for /20/22/25
387	4822 736 22097	IFU - USA for /37
387	4822 736 22098	IFU - Oversea for /21/30
1001-2	4822 255 40993	Heat sink clip

Note: Only the parts mentioned in this list are normal service spare parts.

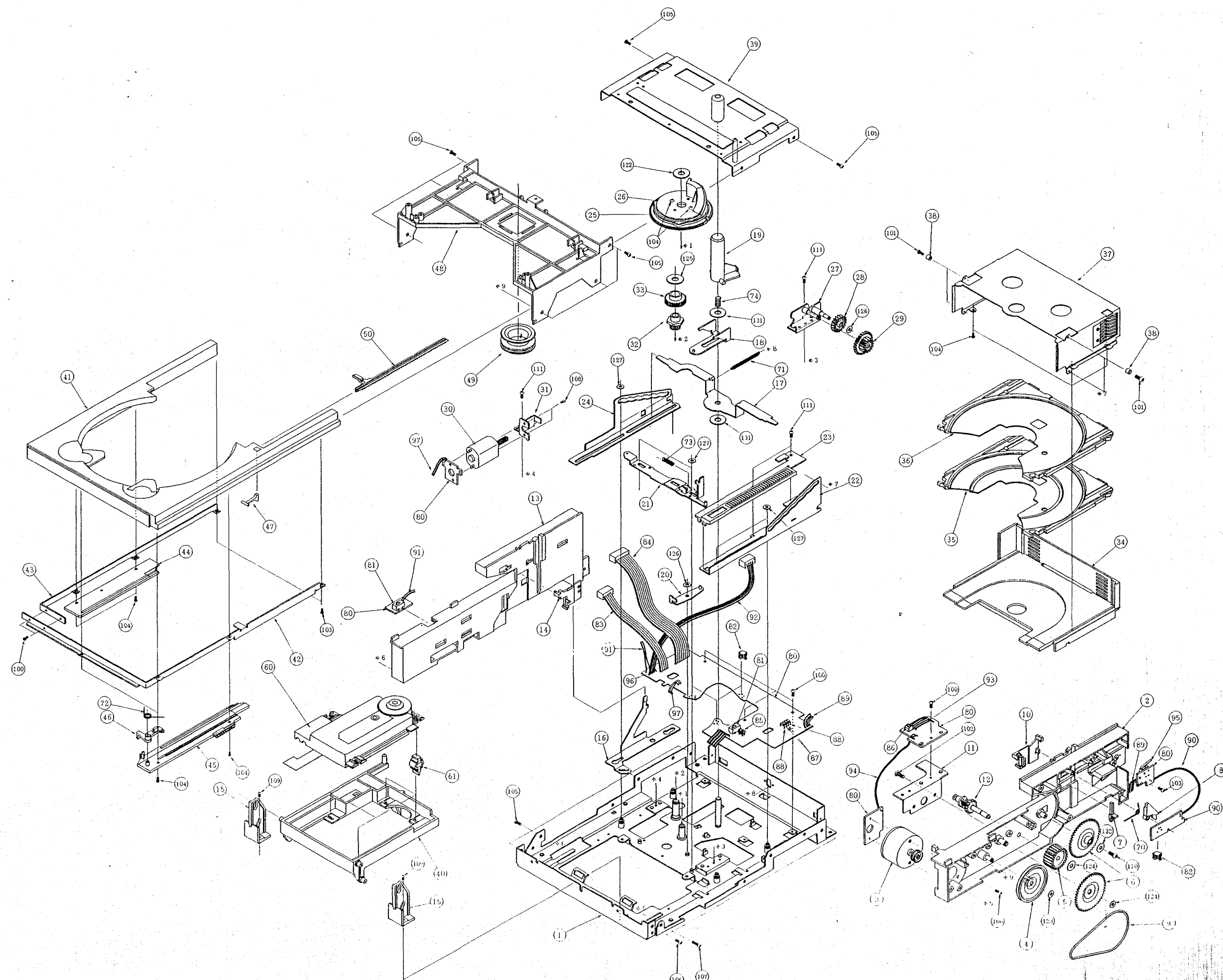
SCREW LIST - CDC UNIT

100	M2 x 5
101	M1.7 x 5
102	D2.6 x 8
103	D2 x 6
104	D2 x 8
105	D2.6 x 12
106	M2.6 x 5
107	M2.6 x 12
108	M2 x 3
109	M2 x 4
110	D1.7 x 4
111	M2 x 4

MECHANICAL PARTS - CDC MECHANISM

3	4822 361 21725	Motor assy R
4	4822 528 70861	Pulley gear
5	4822 522 33484	Change gear
6	4822 522 33483	Gear
9	4822 358 10148	Belt
12	4822 522 20457	Crutch assy
16	4822 402 50316	Carriage lever
17	4822 402 50315	Stocker arm
18	4822 402 61542	Lock pin cam assy
20	4822 402 61536	Arm change assy
21	4822 402 50314	Lever change assy
22	4822 402 61537	Stocker lever R
23	4822 522 33485	Stocker gear
24	4822 402 61538	Stocker lever L
25	4822 522 33479	Cam gear
26	4822 522 33478	Cam B
28	4822 522 33482	Gear
29	4822 522 33481	Gear
30	4822 361 21726	Motor assy F
32	4822 522 33476	Gear
33	4822 522 33477	Gear H
35	4822 466 93397	Carriage S
36	4822 466 93398	Carriage
38	4822 532 12282	Stocker Shaft
41	4822 444 30489	Tray
45	4822 466 93396	Tray plate R
46	4822 402 61539	Lock arm
47	4822 402 61541	Latch lever
49	4822 532 61255	Clamper assy
50	4822 535 93488	Shuttle
60	4822 691 30278	CD mech CDM12.1
61	4822 325 50215	Suspension
70	4822 492 42713	Spring
71	4822 492 33459	Spring
72	4822 492 42714	Spring C
73	4822 492 33461	Spring A
74	4822 492 52407	Spring D
81	4822 271 30845	Switch
82	4822 271 30847	Switch
85	4822 130 91369	Sensor
86	4822 130 91368	Sensor
87	4822 117 11343	470Ω 0.25W
88	4822 117 11344	47k 0.25W
95	4822 271 30846	Switch
122	4822 532 52591	Washer
123	4822 532 52588	Washer
124	4822 532 52589	Washer
125	4822 532 52585	Washer
126	4822 532 52586	Washer
127	4822 532 52587	Washer
131	4822 532 52465	Washer

CDC EXPLODED VIEW



ELECTRICAL PARTS - ECO4VA MIDI BOARD (except /22)

MISCELLANEOUS

1101	4822 267 10283	Socket IEC 75Ω
1104	4822 267 31505	Antenna socket 300Ω



2100	4822 122 33195	100pF 10% 50V
2104	4822 122 33195	100pF 10% 50V
2107	5322 122 34123	1nF 10% 50V
2110	5322 122 32659	33pF 5% 50V for LW version
2110	5322 122 32269	6.8pF 5% 50V
2112	4822 122 33496	100nF 10% 63V
2114	5322 122 32531	100pF 5% 50V for LW version
2115	4822 125 60101	Trimmer 3-11pF 100V
2120	5322 122 32268	470pF 10% 50V
2121	5322 122 32481	15pF 5% 50V
2122	5322 122 34123	1nF 10% 50V
2123	5322 122 34123	1nF 10% 50V
2124	4822 121 51387	10nF 20% 16V
2129	4822 121 43705	390pF 1% 160V for LW version
2130	4822 125 50355	Trimmer 4.2-20pF 100V
2133	4822 122 33128	15nF 10% 63V for LW version
2134	4822 122 33197	1nF 10% 50V
2135	4822 121 70245	560pF 1% 160V
2138	5322 122 32659	33pF 5% 50V for 2-band version
2139	4822 122 33891	3.3nF 10% 63V for LW version
2141	4822 124 40244	2.2μF 20% 63V
2142	4822 124 40242	1μF 20% 63V
2143	4822 124 40239	0.47μF 20% 63V
2144	4822 124 40239	0.47μF 20% 63V
2145	4822 122 33496	100nF 10% 63V for LW version
2146	5322 122 33063	2.2pF 5% 50V for LW version
2147	4822 122 33177	10nF 20% 50V
2150	4822 124 40248	10μF 20% 63V
2151	4822 124 40248	10μF 20% 63V
2154	4822 122 33893	18nF 10% 63V
2154	4822 122 32541	27nF 10% 63V for USA version
2155	4822 122 33893	18nF 10% 63V
2155	4822 122 32541	27nF 10% 63V for USA version
2160	4822 124 40242	1μF 20% 63V
2161	4822 124 40242	1μF 20% 63V
2167	4822 122 33496	100nF 10% 63V
2169	5322 122 31863	330pF 5% 50V



2170	4822 126 11714	4.7nF 20%
2171	5322 126 10223	4.7nF 10% 63V
2172	4822 124 41631	1.5μF 50V
2173	4822 124 40433	47μF 20% 25V
2177	4822 126 12882	100nF +80-20% 50V for LW version
2178	4822 122 33197	1nF 10% 50V
2179	4822 122 33195	100pF 10% 50V
2180	5322 122 31946	27pF 10% 50V
2181	4822 122 32139	12pF 2% 63V
2183	4822 122 33496	100nF 10% 63V
2184	4822 124 41584	100μF 20% 10V
2185	4822 122 33496	100nF 10% 63V
2186	5322 122 34123	1nF 10% 50V



3106	4822 051 20104	100k 5% 0.1W
3107	4822 051 20222	2k2 5% 0.1W for LW version
3108	4822 051 20104	100k 5% 0.1W
3109	4822 051 20222	2k2 5% 0.1W for LW version
3112	4822 116 52176	10Ω 5% 0.5W
3116	4822 051 20335	3M3 5% 0.1W for LW version
3119	4822 116 52224	470Ω 5% 0.5W
3120	4822 116 52289	5k6 5% 0.5W
3121	4822 051 20104	100k 5% 0.1W
3122	4822 051 20471	470Ω 5% 0.1W
3123	4822 051 20223	22k 5% 0.1W
3124	4822 116 52256	2k2 5% 0.5W for LW version
3125	4822 051 20472	4k7 5% 0.1W for LW version
3128	4822 117 10833	10k 1% 0.1W
3129	4822 051 20472	4k7 5% 0.1W for LW version
3132	4822 116 52283	4k7 5% 0.5W
3141	4822 116 52215	220Ω 5% 0.5W
3142	4822 051 20222	2k2 5% 0.1W
3144	4822 117 10833	10k 1% 0.1W
3147	4822 051 20184	180k 5% 0.1W
3148	4822 100 11163	Trimmer 100k 30% 0.1W
3149	4822 051 20563	56k 5% 0.1W
3151	4822 116 52243	1k5 5% 0.5W
3156	4822 116 52233	10k 5% 0.5W
3157	4822 051 20273	27k 5% 0.1W
3158	4822 051 20189	18Ω 5% 0.1W for LW version
3159	4822 051 20563	56k 5% 0.1W
3162	4822 050 11002	1k 1% 0.4W



3163	4822 050 11002	1k 1% 0.4W
3167	4822 051 20008	0Ω Jumper (0805)
3170	4822 116 52283	4k7 5% 0.5W
3171	4822 051 20101	100Ω 5% 0.1W
3172	4822 051 20472	4k7 5% 0.1W
3173	4822 116 52244	15k 5% 0.5W
3174	4822 116 52233	10k 5% 0.5W
3175	4822 051 20104	100k 5% 0.1W
3176	4822 051 20101	100Ω 5% 0.1W
3177	4822 116 52233	10k 5% 0.5W for LW version
3183	4822 051 20223	22k 5% 0.1W
3184	4822 051 20223	22k 5% 0.1W
3186	4822 051 20104	100k 5% 0.1W
3188	4822 051 10102	1k 2% 0.25W
3189	4822 116 52249	1k8 5% 0.5W
3190	4822 116 52249	1k8 5% 0.5W
3191	4822 116 52249	1k8 5% 0.5W
3192	4822 116 52249	1k8 5% 0.5W
3193	4822 116 52256	2k2 5% 0.5W
3194	4822 116 52219	330Ω 5% 0.5W for 2-band version
3195	4822 116 52219	330Ω 5% 0.5W
3197	4822 116 52219	330Ω 5% 0.5W
3206	4822 116 52215	220Ω 5% 0.5W
3211	4822 051 10008	0Ω 5% 0.25W
3212	4822 051 10008	0Ω 5% 0.25W
3213	4822 051 10008	0Ω 5% 0.25W
3222	4822 051 20008	0Ω Jumper (0805) for 2-band version
3223	4822 051 20008	0Ω Jumper (0805) for LW version
3224	4822 051 20008	0Ω Jumper (0805)
3226	4822 051 20008	0Ω Jumper (0805) for 2-band version
3228	4822 051 10008	0Ω 5% 0.25W
3229	4822 051 20008	0Ω Jumper (0805) for 2-band version
3231	4822 051 20008	0Ω Jumper (0805)
3233	4822 051 20008	0Ω Jumper (0805)
3235	4822 051 20008	0Ω Jumper (0805)
3237	4822 051 10008	0Ω 5% 0.25W
3238	4822 051 20008	0Ω Jumper (0805) for LW version
3240	4822 051 10479	47Ω 2% 0.25W
3241	4822 051 20008	0Ω Jumper (0805) for 2-band version
3242	4822 051 10008	0Ω 5% 0.25W
3243	4822 051 20008	0Ω Jumper (0805) for 2-band version
3244	4822 051 20008	0Ω Jumper (0805)
3245	4822 051 20008	0Ω Jumper (0805) for 2-band version



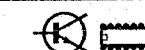
3246	4822 051 10008	0Ω 5% 0.25W
3247	4822 051 10008	0Ω 5% 0.25W
3248	4822 051 10008	0Ω 5% 0.25W



5105	4822 158 60641	MW/LW Antenna for LW version
5106	4822 158 60642	MW Antenna for 2-band version
5109	4822 156 30947	RF Coil 1.5 T
5120	4822 156 30947	RF Coil 1.5 T
5122	4822 157 60517	Osc. Coil LW for LW version
5123	4822 157 60517	Osc. Coil MW
5125	4822 157 61898	0.47μH for 2-band version
5140	4822 158 60511	AM-IF Filter 450kHz
5142	4822 157 70302	AM-IF Filter 450kHz
5143	4822 242 70665	Ceramic Filter 10.7MHz
5144	4822 242 70665	Ceramic Filter 10.7MHz
5145	4822 242 81362	Ceramic Discriminator
5170	4822 242 72976	Ceramic Resonator 7.2MHz



6105	4822 130 83075	HN1V02H
6109	4822 130 82833	1SV228
6121	4822 130 30621	1N4148 (refer to circuit)
6122	4822 130 30621	1N4148 (refer to circuit)
6123	4822 130 30621	1N4148 (refer to circuit)
6124	4822 130 82833	1SV228
6140	4822 130 30621	1N4148
6154	4822 130 30621	1N4148
6174	4822 130 34233	BZX79-B5V1



7102	5322 130 42136	BC848C for LW version
7104	5322 130 42136	BC848C for LW version
7105	4822 130 60093	2SA838B
7120	4822 130 60163	2SC1047
7121	5322 130 42136	BC848C for LW version
7123	5322 130 42136	BC848C for LW version
7128	5322 130 42136	BC848C for LW version
7140	4822 209 32701	TEA5712T/N2 (RF IC)
7168	5322 130 41983	BC858B
7170	5322 130 42136	BC848C
7171	5322 130 42136	BC848C
7172	5322 209 11517	MM74HCU04M Inverter
7173	4822 209 31998	LC7218M (Synthesizer)
7179	5322 130 42136	BC848C for LW version

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS - TUNER 92 BOARD (For /22 only)

MISCELLANEOUS

1101	4822 210 10492	Tuner unit FE415-G11
1110	4822 267 10283	FM Antenna socket



2101	5322 122 34099	470pF 10% 63V
2102	5322 122 32268	470pF 10% 50V
2103	4822 124 40433	47μF 20% 25V
2104	4822 121 42408	220nF 5% 63V
2105	5322 122 32654	22nF 10% 63V
2108	5322 122 32654	22nF 10% 63V
2109	5322 122 32654	22nF 10% 63V
2110	5322 122 32654	22nF 10% 63V
2111	4822 122 32927	220nF +80-20% 50V
2112	5322 122 32654	22nF 10% 63V
2113	5322 122 32661	56pF 5% 50V
2114	5322 124 41431	22μF 20% 35V
2115	4822 124 40239	0.47μF 20% 63V
2116	5322 121 42386	100nF 5% 63V
2117	4822 122 33336	8.2nF 10% 50V
2118	4822 122 33336	8.2nF 10% 50V
2119	4822 124 40244	2.2μF 20% 63V
2120	4822 124 40244	2.2μF 20% 63V
2121	4822 124 40196	220μF 20% 16V
2123	4822 124 40246	4.7μF 20% 63V
2124	4822 124 40246	4.7μF 20% 63V
2125	4822 122 33177	10nF 20% 50V
2126	4822 122 31782	15nF 10% 50V
2127	5322 122 31863	330pF 5% 50V
2128	5322 116 80853	560pF 5% 63V
2129	4822 124 40242	1μF 20% 63V
2131	4822 124 40248	10μF 20% 63V
2142	4822 125 60102	Trimmer 5.2-30pF 100V
2144	4822 121 42408	220nF 5% 63V
2145	4822 121 51263	510pF 1% 400V
2146	4822 121 70082	430pF 1% 400V
2147	5322 122 32654	22nF 10% 63V
2148	5322 122 32452	47pF 5% 63V
2149	4822 122 33177	10nF 20% 50V
2150	5322 122 32654	22nF 10% 63V
2151	5322 122 34099	470pF 10% 63V
2152	4822 124 40242	1μF 20% 63V
2153	5322 122 34099	470pF 10% 63V
2154	5322 122 32481	15pF 5% 50V
2155	5322 122 32965	18pF 5% 50V
2156	4822 124 40433	47μF 20% 25V
2158	5322 126 10223	4.7nF 10% 63V
2159	5322 126 10223	4.7nF 10% 63V
2160	4822 124 41631	1.5μF 50V
2161	4822 122 32927	220nF +80-20% 50V
2162	4822 126 11585	22nF +80-20% 25V
2188	5322 122 32654	22nF 10% 63V



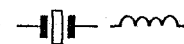
2193	4822 125 60102	Trimmer 5.2-30pF 100V
2194	4822 125 60101	Trimmer 3-11pF 100V
2195	5322 122 33861	120pF 10% 50V
2196	5322 122 32448	10pF 5% 50V
2210	4822 124 41643	100μF 20% 16V
2215	5322 122 32268	470pF 10% 50V
2216	5322 122 32268	470pF 10% 50V
2221	5322 122 32268	470pF 10% 50V
2224	4822 122 33575	220pF 5% 50V
2225	4822 122 33575	220pF 5% 50V



3101	4822 052 10478	Δ 4Ω 7 5% 0.33W
3102	4822 051 20224	220k 5% 0.1W
3104	4822 051 20154	150k 5% 0.1W
3105	4822 051 20562	5k 5% 0.1W
3106	4822 051 20829	82Ω 5% 0.1W
3107	4822 051 20008	0Ω Jumper (0805)
3113	4822 050 22201	Δ 220Ω 1% 0.6W
3114	4822 051 20332	3k 5% 0.1W
3115	4822 051 20391	390Ω 5% 0.1W
3116	4822 051 20478	4Ω 7 5% 0.1W
3117	4822 051 20331	330Ω 5% 0.1W
3118	4822 050 22201	Δ 220Ω 1% 0.6W
3120	4822 052 10229	Δ 22Ω 5% 0.33W
3121	4822 051 20272	2k 7 5% 0.1W
3122	4822 051 20562	5k 5% 0.1W
3123	4822 051 20223	22k 5% 0.1W
3124	4822 117 10833	10k 1% 0.1W
3125	4822 100 11213	Trimmer 22k 30% 0.1W
3126	4822 051 20123	12k 5% 0.1W
3127	4822 051 20182	1k 8 5% 0.1W
3128	4822 051 20182	1k 8 5% 0.1W
3129	4822 051 20822	8k 2 5% 0.1W
3130	4822 116 52283	4k 7 5% 0.5W
3131	4822 100 11319	Trimmer 4k 7 30% 0.1W
3132	4822 117 10833	18k 1% 0.1W
3133	4822 051 20008	0Ω Jumper (0805)
3134	4822 116 52289	5k 5% 0.5W
3135	4822 051 10008	0Ω 5% 0.25W
3137	4822 116 52283	4k 7 5% 0.5W
3138	4822 116 83922	Δ 150Ω 5% 1W
3139	4822 051 20008	0Ω Jumper (0805)
3141	4822 051 20472	4k 7 5% 0.1W
3142	4822 051 20472	4k 7 5% 0.1W
3143	4822 051 20821	820Ω 5% 0.1W
3144	4822 051 20331	330Ω 5% 0.1W
3145	4822 051 20271	270Ω 5% 0.1W
3147	4822 116 52289	5k 5% 0.5W
3148	4822 051 20104	100k 5% 0.1W
3149	4822 051 20472	4k 7 5% 0.1W



3150	4822 050 25601	560Ω 1% 0.6W
3151	4822 116 52283	4k 7 5% 0.5W
3152	4822 117 10833	10k 1% 0.1W
3153	4822 051 20274	270k 5% 0.1W
3155	4822 050 22201	Δ 220Ω 1% 0.6W
3156	4822 051 20153	15k 5% 0.1W
3157	4822 051 20472	4k 7 5% 0.1W
3158	4822 116 52283	4k 7 5% 0.5W
3159	4822 051 20104	100k 5% 0.1W
3160	4822 051 20104	100k 5% 0.1W
3162	4822 050 22701	Δ 270Ω 1% 0.6W
3163	4822 117 10833	10k 1% 0.1W
3164	4822 051 10473	47k 2% 0.25W
3165	4822 050 11002	1k 1% 0.4W
3166	4822 050 11002	1k 1% 0.4W
3167	4822 050 11002	1k 1% 0.4W
3168	4822 051 20008	0Ω Jumper (0805)
3170	4822 117 10833	10k 1% 0.1W
3171	4822 051 20223	22k 5% 0.1W
3172	4822 051 20472	4k 7 5% 0.1W
3173	4822 051 20223	22k 5% 0.1W
3190	4822 051 20479	47Ω 5% 0.1W
3194	4822 051 20472	4k 7 5% 0.1W
3196	4822 051 20008	0Ω Jumper (0805)
3197	4822 051 20008	0Ω Jumper (0805)
3198	4822 117 10833	10k 1% 0.1W
3200	4822 051 20008	0Ω Jumper (0805)
3201	4822 051 20472	4k 7 5% 0.1W
3202	4822 051 20008	0Ω Jumper (0805)
3223	4822 051 20474	470k 5% 0.1W
3225	4822 050 11002	1k 1% 0.4W
3229	4822 051 20008	0Ω Jumper (0805)
3233	4822 051 10102	1k 2% 0.25W
3236	4822 051 20008	0Ω Jumper (0805)
3238	4822 051 20008	0Ω Jumper (0805)
3239	4822 051 20274	270k 5% 0.1W
3240	4822 051 20472	4k 7 5% 0.1W



5103	4822 242 72342	Ceramic filter 10.7MHz
5104	4822 157 63029	IF coil AM
5105	4822 157 63904	Q Detection coil
5106	4822 157 71044	Birdy coil
5108	4822 157 63912	AM osc
5110	4822 242 71878	Ceramic filter 450kHz
5111	4822 242 81248	Ceramic resonator 19kHz
5112	4822 242 72976	Crystal resonator 7.2MHz
5113	4822 242 72342	Ceramic filter 10.7MHz
5114	4822 157 51503	560μH 10%
5127	4822 158 60643	Ferroceptor



6101	4822 130 34174	BZX79-C4V7
6102	4822 130 83075	HN1V02H
6110	4822 130 30621	1N4148



7103	4822 209 31001	LA1851N
7104	5322 130 60068	BC558C
7105	4822 209 30178	LC7218
7106	4822 130 41327	BC327-40
7107	5322 130 41982	BC848B
7108	4822 130 44196	BC548C
7109	4822 130 44196	BC548C
7111	5322 130 41982	BC848B
7112	4822 130 60163	2SC1047
7113	4822 130 44196	BC548C
7114	4822 130 40937	BC548B
7115	4822 130 41024	BF245B
7116	4822 130 60163	2SC1047
7125	4822 130 44197	BC558B
7151	4822 130 60163	2SC1047

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS - CDC BOARD

MISCELLANEOUS

1830	4822 071 51601	Fuse T160mA 250V
1850	4822 267 60383	Flex socket 24P
1852	4822 267 60383	Flex socket 24P
8801	4822 321 62522	Flex cable 24P



2752	5322 122 32531	100pF 5% 50V
2763	5322 122 32658	22pF 5% 50V
2764	5322 122 32658	22pF 5% 50V
2769	4822 124 40246	100pF 20% 63V
2770	4822 124 40246	4.7μF 20% 63V
2802	4822 124 40242	1μF 20% 63V
2803	4822 122 33515	82pF 5% 63V
2804	4822 122 33515	82pF 5% 63V
2805	5322 122 33538	150pF 2% 63V
2806	5322 122 31946	27pF 10% 50V
2807	5322 122 32452	47pF 5% 63V
2808	5322 122 32452	47pF 5% 63V
2809	5322 122 32452	47pF 5% 63V
2810	5322 122 32481	15pF 5% 50V
2811	5322 122 33538	150pF 2% 63V
2814	4822 122 33175	2.2nF 20% 50V
2818	4822 124 40433	47μF 20% 25V
2820	4822 122 33173	560pF 10% 50V
2821	4822 126 10326	180pF 5% 63V
2822	5322 122 31863	330pF 5% 50V
2823	5322 122 31865	1.5nF 10% 63V
2824	4822 126 10326	180pF 5% 63V
2825	4822 122 33575	220pF 5% 50V
2826	4822 122 33575	220pF 5% 50V
2827	4822 122 33575	220pF 5% 50V
2828	4822 122 33575	220pF 5% 50V
2829	4822 122 33575	220pF 5% 50V
2830	4822 122 33575	220pF 5% 50V
2831	4822 124 40433	47μF 20% 25V
2833	5322 124 41431	22μF 20% 35V
2834	5322 122 32654	22nF 10% 63V
2836	4822 122 32646	5.6nF 10% 50V
2837	4822 122 33173	560pF 10% 50V
2838	4822 122 31947	100nF 20% 63V
2839	4822 122 33177	10nF 20% 50V
2840	4822 122 33219	1.8nF 10% 50V
2843	4822 124 40239	0.47μF 20% 63V
2844	5322 122 32531	100pF 5% 50V
2846	4822 122 31947	100nF 20% 63V
2847	4822 124 40433	47μF 20% 25V
2848	4822 124 40433	47μF 20% 25V
2849	4822 124 40433	47μF 20% 25V
2850	4822 124 40246	4.7μF 20% 63V
2851	4822 122 33336	8.2nF 10% 50V
2852	4822 122 31947	100nF 20% 63V



2853	4822 122 31947	100nF 20% 63V
2854	5322 122 32531	100pF 5% 50V
2855	4822 122 31947	100nF 20% 63V
2856	5322 121 42661	330nF 5% 63V
2857	5322 122 32452	47pF 5% 63V
2858	5322 122 32654	22nF 10% 63V
2859	4822 122 31947	100nF 20% 63V
2860	4822 124 40433	47μF 20% 25V
2861	5322 122 32452	47pF 5% 63V
2862	5322 122 32452	47pF 5% 63V
2863 #	4822 122 31947	100nF 20% 63V
2864 #	4822 124 40433	47μF 20% 25V
2865 #	4822 124 40433	47μF 20% 25V
2866	4822 124 41997	470μF 10V
2867	4822 122 31947	100nF 20% 63V
2868 #	5322 122 34123	1nF 10% 50V
2869 #	5322 122 34123	1nF 10% 50V
2876	5322 122 34123	1nF 10% 50V
2877	5322 122 34123	1nF 10% 50V
2878	5322 122 32531	100pF 5% 50V
2879	5322 122 32531	100pF 5% 50V
2881	4822 124 40433	47μF 20% 25V
2882	4822 124 41643	100μF 20% 16V
2883	4822 122 31947	100nF 20% 63V
2886	5322 122 32531	100pF 5% 50V
2891	4822 122 31947	100nF 20% 63V
2892	4822 124 40433	47μF 20% 25V
2893	5322 122 32531	100pF 5% 50V
2894	5322 122 32531	100pF 5% 50V
2895	5322 122 32531	100pF 5% 50V
2896	4822 124 40433	47μF 20% 25V
2897	4822 122 33173	560pF 10% 50V
2898	4822 122 33173	560pF 10% 50V
2899	4822 124 40433	47μF 20% 25V



3751	4822 051 20331	330Ω 5% 0.1W
3752	4822 051 20221	220Ω 5% 0.1W
3755	4822 117 10833	10k 1% 0.1W
3760	4822 050 11002	1k 1% 0.4W
3761	4822 050 11002	1k 1% 0.4W
3762	4822 051 20221	220Ω 5% 0.1W
3763	4822 051 20221	220Ω 5% 0.1W
3764	4822 051 20221	220Ω 5% 0.1W
3781	4822 051 20479	47Ω 5% 0.1W
3782	4822 051 20472	4k7 5% 0.1W
3783	4822 117 10833	10k 1% 0.1W
3784	4822 117 10833	10k 1% 0.1W
3785	4822 117 10833	10k 1% 0.1W
3786	4822 117 10833	10k 1% 0.1W
3787	4822 117 10833	10k 1% 0.1W



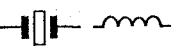
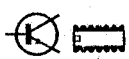
3788	4822 117 10833	10k 1% 0.1W
3789	4822 117 10833	10k 1% 0.1W
3790	4822 117 10833	10k 1% 0.1W
3791 *	4822 117 10833	10k 1% 0.1W
3792 #	4822 117 10833	10k 1% 0.1W
3793	4822 117 10833	10k 1% 0.1W
3794	4822 117 10833	10k 1% 0.1W
3795	4822 117 10833	10k 1% 0.1W
3796	4822 117 10833	10k 1% 0.1W
3797	4822 117 10833	10k 1% 0.1W
3798	4822 117 10833	10k 1% 0.1W
3799	4822 117 10833	10k 1% 0.1W
3801	4822 116 52224	470Ω 5% 0.5W
3802	4822 051 10102	1k 2% 0.25W
3803	4822 051 20335	3M3 5% 0.1W
3804	4822 051 20682	6k8 5% 0.1W
3805	4822 051 20223	22k 5% 0.1W
3806	4822 117 10833	10k 1% 0.1W
3807	4822 117 10833	10k 1% 0.1W
3808	4822 117 10834	47k 1% 0.1W
3809	4822 051 20332	3k3 5% 0.1W
3810	4822 051 20332	3k3 5% 0.1W
3811	4822 051 20223	22k 5% 0.1W
3812	4822 051 20332	3k3 5% 0.1W
3813	4822 051 20332	3k3 5% 0.1W
3814	4822 051 20332	3k3 5% 0.1W
3815	4822 050 11002	1k 1% 0.4W
3816 #	4822 117 10833	10k 1% 0.1W
3816	4822 051 20103	10k 5% 0.1W
3817	4822 051 20221	220Ω 5% 0.1W
3818	4822 116 52233	10k 5% 0.5W
3820	4822 050 11002	1k 1% 0.4W
3821	4822 051 20124	120k 5% 0.1W
3822	4822 051 20563	56k 5% 0.1W
3823	4822 051 20331	330Ω 5% 0.1W
3824	4822 051 20124	120k 5% 0.1W
3825	4822 116 52233	10k 5% 0.5W
3826	4822 116 52233	10k 5% 0.5W
3827	4822 116 52233	10k 5% 0.5W
3828	4822 116 52233	10k 5% 0.5W
3829	4822 116 52233	10k 5% 0.5W
3830	4822 116 52233	10k 5% 0.5W
3831	4822 051 20224	220k 5% 0.1W
3832	4822 052 10478	4Ω7 5% 0.33W
3833	4822 117 10833	10k 1% 0.1W
3834	4822 052 10478	4Ω7 5% 0.33W
3835	4822 116 52264	27k 5% 0.5W
3836	4822 051 20122	1k2 5% 0.1W
3837	4822 051 20682	6k8 5% 0.1W
3838	4822 116 52257	22k 5% 0.5W
3839	4822 051 20122	1k2 5% 0.1W
3840	4822 051 20682	6k8 5% 0.1W



3841 #	4822 051 20333	33k 5% 0.1W
3841	4822 051 20393	39k 5% 0.1W
3842	4822 051 10102	1k 2% 0.25W
3843	4822 051 20333	33k 5% 0.1W
3844	4822 051 10102	1k 2% 0.25W
3845	4822 051 20333	33k 5% 0.1W
3846	4822 051 10102	1k 2% 0.25W
3847	4822 052 10228	Δ 2Ω2 5% 0.33W
3848	4822 050 11002	1k 1% 0.4W
3849	4822 052 10478	Δ 4Ω7 5% 0.33W
3850	4822 051 10102	1k 2% 0.25W
3851	4822 116 52264	27k 5% 0.5W
3852	4822 051 10102	1k 2% 0.25W
3853	4822 051 20822	8k2 5% 0.1W
3855	4822 051 20224	220k 5% 0.1W
3856	4822 051 20223	22k 5% 0.1W
3857	4822 051 20221	220Ω 5% 0.1W
3858	4822 051 20221	220Ω 5% 0.1W
3860	4822 052 10478	4Ω7 5% 0.33W
3862	4822 051 20105	1M 5% 0.1W
3863	4822 050 11002	1k 1% 0.4W
3864	4822 050 11002	1k 1% 0.4W
3865	4822 050 11002	1k 1% 0.4W
3866	4822 051 20331	330Ω 5% 0.1W
3867 #	4822 052 10479	47Ω 5% 0.33W
3868	4822 052 10479	47Ω 5% 0.33W
3871	4822 052 10478	Δ 4Ω7 5% 0.33W
3872	4822 117 10833	10k 1% 0.1W
3876	4822 117 10834	47k 1% 0.1W
3877	4822 117 10834	47k 1% 0.1W
3878	4822 051 20472	4k7 5% 0.1W
3879	4822 051 20472	4k7 5% 0.1W
3880	4822 051 10102	1k 2% 0.25W
3881	4822 051 10102	1k 2% 0.25W
3885	4822 050 11002	1k 1% 0.4W
3886	4822 116 52226	560Ω 5% 0.5W
3887	4822 051 20223	22k 5% 0.1W
3889	4822 117 10833	10k 1% 0.1W
3890	4822 050 11002	1k 1% 0.4W
3891	4822 052 10478	Δ 4Ω7 5% 0.33W
3892	4822 117 10833	10k 1% 0.1W
3893	4822 117 10833	10k 1% 0.1W
3894	4822 117 10833	10k 1% 0.1W
3895 #	4822 051 20273	27k 5% 0.1W
3895	4822 051 20333	33k 5% 0.1W
3896	4822 051 10102	1k 2% 0.25W
3899	4822 052 10478	Δ 4Ω7 5% 0.33W
9870	4822 051 20008	0Ω 0 Jumper (0805)
9880	4822 051 10008	0Ω 5% 0.25W
9881	4822 051 10008	0Ω 5% 0.25W
9882	4822 051 10008	0Ω 5% 0.25W
9883	4822 051 10008	0Ω 5% 0.25W

For Bitstream version only

* For Non-bitstream version only

		
9884	4822 051 10008	0Ω 5% 0.25W
9885	4822 051 10008	0Ω 5% 0.25W
		
5860	4822 242 81151	Crystal 16.9334MHz
5861	5322 242 73697	Ceramic resonator 8MHz
5890	4822 242 73557	Resonator 8.467MHz
		
6857	5322 130 30684	1N4002GP
6858	5322 130 30684	1N4002GP
6881	4822 130 31981	BZX79-C3V9
6883	5322 130 34563	BZX79-C2V7
		
7800	4822 209 30704	MC74HCU04D
7820	5322 130 44779	BC338-40
7830	4822 209 33407	TMP87CC70
7850	4822 209 31064	TDA1301T/N1
7851	4822 209 32852	TDA7073A/N2
7852	4822 209 32852	TDA7073A/N2
7853	4822 209 32852	TDA7073A/N2
7856	4822 130 41715	BC328-40
7860	4822 209 33339	SAA7345GP/M5
7870 #	4822 209 33252	TDA1549T/N1
7872 *	4822 209 32421	TDA1311A/N2
7881	5322 130 60068	BC558C
7883	5322 130 60068	BC558C
7884	4822 130 40855	BC337
7885	4822 130 40855	BC337
7886	4822 209 80891	MC7805CT

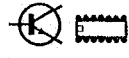
For Bitstream versions only

* For Non-bitstream versions only

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS - CDC KEY BOARD

MISCELLANEOUS		
1450	4822 276 13114	Tact switch
1451	4822 276 13114	Tact switch
1452	4822 276 13114	Tact switch
1453	4822 276 13114	Tact switch
1454	4822 276 13114	Tact switch
1455	4822 276 13114	Tact switch
1456	4822 276 13114	Tact switch
1457	4822 276 13114	Tact switch
1458	4822 276 13114	Tact switch
1459	4822 276 13114	Tact switch
1460	4822 276 13114	Tact switch
1461	4822 276 13114	Tact switch
1462	4822 276 13114	Tact switch
1463	4822 276 13114	Tact switch
1464	4822 276 13114	Tact switch
1465	4822 276 13114	Tact switch
1466	4822 276 13114	Tact switch
1467	4822 276 13114	Tact switch
1468	4822 276 13114	Tact switch
1469	4822 276 13114	Tact switch
1470	4822 276 13114	Tact switch
1471	4822 276 13114	Tact switch
1472	4822 276 13114	Tact switch
1473	4822 276 13114	Tact switch
1474	4822 276 13114	Tact switch
1475	4822 276 13114	Tact switch
1476	4822 276 13114	Tact switch
1478	4822 276 13114	Tact switch
1479	4822 276 13114	Tact switch
1480	4822 276 13114	Tact switch
1481	4822 276 13114	Tact switch
1484	4822 276 13114	Tact switch
1485	4822 276 13114	Tact switch
		
3450	4822 116 52219	330Ω 5% 0.5W
3451	4822 116 52219	330Ω 5% 0.5W
3452	4822 116 52219	330Ω 5% 0.5W
3453	4822 116 52219	330Ω 5% 0.5W
3454	4822 116 52219	330Ω 5% 0.5W
3455	4822 116 52219	330Ω 5% 0.5W
3456	4822 116 52219	330Ω 5% 0.5W
3457	4822 116 52219	330Ω 5% 0.5W
3458	4822 116 52219	330Ω 5% 0.5W
3459	4822 116 52219	330Ω 5% 0.5W
3460	4822 116 52219	330Ω 5% 0.5W
3461	4822 116 52219	330Ω 5% 0.5W
3462	4822 116 52219	330Ω 5% 0.5W
3463	4822 116 52219	330Ω 5% 0.5W
3464	4822 116 52233	10k 5% 0.5W
3465	4822 116 52233	10k 5% 0.5W

		
3466	4822 116 52233	10k 5% 0.5W
3467	4822 116 52234	100k 5% 0.5W
		
6450	4822 130 30621	1N4148
6451	4822 130 30621	1N4148
6452	4822 130 30621	1N4148
6453	4822 130 30621	1N4148
6454	4822 130 30621	1N4148
6455	4822 130 30621	1N4148
6456	4822 130 30621	1N4148
6457	4822 130 30621	1N4148
6458	4822 130 30621	1N4148
6459	4822 130 82978	LTL-16KPE
6460	4822 130 83363	LTL-16KGE
6461	4822 130 82978	LTL-16KPE
6462	4822 130 83363	LTL-16KGE
6463	4822 130 82978	LTL-16KPE
6464	4822 130 83363	LTL-16KGE
6465	4822 130 82978	LTL-16KPE
6466	4822 130 82978	LTL-16KPE
6467	4822 130 83363	LTL-16KGE
6468	4822 130 82978	LTL-16KPE
6469	4822 130 83363	LTL-16KGE
6470	4822 130 82978	LTL-16KPE
6471	4822 130 83363	LTL-16KGE
6472	4822 130 83363	LTL-16KGE
6473	4822 130 30621	1N4148
6474	4822 130 30621	1N4148
6475	4822 130 30621	1N4148
6476	4822 130 30621	1N4148
		
7450	4822 130 40937	BC548B
7495	5322 209 71555	74HC373D
7496	5322 209 71555	74HC373D
7498	5322 209 10421	HEF4094BP

ELECTRICAL PARTS - FRONT BOARD

MISCELLANEOUS		
1401 ^	4822 130 91324	LCD Display
1401	4822 130 91315	LCD Display for FW56/37
1410	4822 276 13114	Tact Switch
1411	4822 276 13114	Tact Switch
1412	4822 276 13114	Tact Switch
1413	4822 276 13114	Tact Switch
1414	4822 276 13114	Tact Switch
1415	4822 276 13114	Tact Switch
1416	4822 276 13114	Tact Switch
1417	4822 276 13114	Tact Switch
1418	4822 276 13114	Tact Switch
1419	4822 276 13114	Tact Switch
1420	4822 276 13114	Tact Switch
1421	4822 276 13114	Tact Switch
1422	4822 276 13114	Tact Switch
1423	4822 276 13114	Tact Switch
1424	4822 276 13114	Tact Switch
1425	4822 276 13114	Tact Switch
1426	4822 276 13114	Tact Switch
1428	4822 276 13114	Tact Switch
1429	4822 276 13114	Tact Switch
1430	4822 276 13114	Tact Switch
1431	4822 276 13114	Tact Switch
1432	4822 276 13114	Tact Switch
1433	4822 276 13114	Tact Switch
1434	4822 276 13114	Tact Switch
		
2401	4822 124 40349	330μF 20% 16V
2402	4822 124 80211	22mF 20% 5.5V
2403	4822 124 23176	22μF 20% 16V
2405	4822 126 11585	22nF +80-20% 25V
2410	4822 124 23179	10μF 20% 16V
2411	4822 126 12333	100nF 20% 25V
2413	4822 122 33191	22pF 5% 50V
2414	4822 122 33191	22pF 5% 50V
2415	4822 121 51387	10nF 20% 16V
2417	4822 122 33849	150pF 10% 50V
2418	4822 122 33849	150pF 10% 50V
2424	4822 126 12787	330pF 10% 50V
2425 ^	4822 122 10466	220pF 10% 50V
2427 ^	4822 126 12145	47nF 10% 25V
2470 ^	4822 124 40248	10μF 20% 63V
2471 ^	4822 124 40248	10μF 20% 63V
2472 ^	4822 122 10577	3.3nF 10% 16V
2473 ^	4822 122 33195	100pF 10% 50V
2475 ^	4822 126 12145	47nF 10% 25V
2476 ^	4822 126 12145	47nF 10% 25V
2477 ^	4822 126 12145	47nF 10% 25V

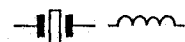
^ For Spectrum version only



3402	4822 116 52228	680Ω 5% 0.5W
3403	4822 116 52234	100k 5% 0.5W
3404	4822 116 52233	10k 5% 0.5W
3405	4822 116 52224	470Ω 5% 0.5W
3406	4822 116 52256	2k2 5% 0.5W
3407	4822 050 11002	1k 1% 0.4W
3416	4822 116 52233	10k 5% 0.5W
3417	4822 116 52233	10k 5% 0.5W
3418	4822 116 52233	10k 5% 0.5W
3419	4822 116 52233	10k 5% 0.5W
3421	4822 116 52283	4k7 5% 0.5W
3422	4822 116 52283	4k7 5% 0.5W
3423	4822 116 52283	4k7 5% 0.5W
3424	4822 116 90836	Resistor network 5 X 10k
3425	4822 116 52283	4k7 5% 0.5W
3426	4822 116 52233	100Ω 5% 0.5W
3427	4822 116 52233	10k 5% 0.5W
3428	4822 116 52233	10k 5% 0.5W
3429	4822 116 52233	10k 5% 0.5W
3430	4822 116 52233	10k 5% 0.5W
3431	4822 116 52233	10k 5% 0.5W
3432	4822 050 11002	1k 1% 0.4W
3433	4822 116 52233	10k 5% 0.5W
3434	4822 116 52233	10k 5% 0.5W
3435	4822 116 52233	10k 5% 0.5W
3436	4822 116 52233	10k 5% 0.5W
3437	4822 116 52233	10k 5% 0.5W
3438	4822 116 52233	10k 5% 0.5W
3439	4822 116 52233	10k 5% 0.5W
3440	4822 050 11002	1k 1% 0.4W
3441	4822 050 11002	1k 1% 0.4W
3442	4822 050 11002	1k 1% 0.4W
3443 ^	4822 050 11002	1k 1% 0.4W
3444	4822 050 11002	1k 1% 0.4W
3445	4822 050 11002	1k 1% 0.4W
3446	4822 050 11002	1k 1% 0.4W
3447	4822 050 11002	1k 1% 0.4W
3449	4822 116 90836	Resistor network 5 X 10k
3450	4822 116 52233	10k 5% 0.5W
3451	4822 116 52233	10k 5% 0.5W
3452	4822 116 52233	330Ω 5% 0.5W
3453	4822 050 11002	1k 1% 0.4W
3454	4822 116 52263	2k7 5% 0.5W
3456	4822 050 11002	1k 1% 0.4W
3460	4822 116 52233	10k 5% 0.5W
3461	4822 116 52219	330Ω 5% 0.5W
3462 ^	4822 116 52233	10k 5% 0.5W
3470 ^	4822 116 52257	22k 5% 0.5W
3471 ^	4822 116 52233	10k 5% 0.5W
3472 ^	4822 116 52257	22k 5% 0.5W
3473 ^	4822 116 52233	10k 5% 0.5W
3474 ^	4822 116 52257	22k 5% 0.5W



3475 ^	4822 116 52233	10k 5% 0.5W
3476 ^	4822 116 52257	22k 5% 0.5W
3477 ^	4822 116 52233	10k 5% 0.5W
3478 ^	4822 116 52257	22k 5% 0.5W
3479 ^	4822 116 52233	10k 5% 0.5W
3481	4822 116 52234	100k 5% 0.5W
3482 ^	4822 116 52258	220k 5% 0.5W
3483 ^	4822 116 52258	220k 5% 0.5W
3484 ^	4822 116 52233	10k 5% 0.5W
3485 ^	4822 116 52233	10k 5% 0.5W
3486 ^	4822 116 52269	3k3 5% 0.5W
3487 ^	4822 116 52233	10k 5% 0.5W
3488	4822 116 52233	10k 5% 0.5W for /37 only
3490	4822 050 11002	1k 1% 0.4W
3491	4822 050 11002	1k 1% 0.4W
3492	4822 050 11002	1k 1% 0.4W
3493	4822 050 11002	1k 1% 0.4W
3494	4822 050 11002	1k 1% 0.4W
3495	4822 050 11002	1k 1% 0.4W
3498	4822 116 90836	Resistor network 5 X 10k
3525	4822 116 52283	4k7 5% 0.5W



5401	5322 242 73697	Ceramic resonator 8MHz
5402	4822 242 70938	Crystal 32.768kHz
5403	4822 156 21721	2.2μH 20%
5404	4822 156 21125	3.9μH 10%
5409	4822 156 21721	2.2μH 20%
5409	4822 156 21721	2.2μH 20%
5412	4822 156 21721	2.2μH 20%
5413	4822 156 21721	2.2μH 20%
5415	4822 156 21721	2.2μH 20%



6401	4822 130 30621	1N4148
6402	4822 130 30621	1N4148
6406	4822 214 52009	GP1U58XP
6410	4822 130 30621	1N4148
6411	4822 130 30621	1N4148
6412	4822 130 30621	1N4148
6413	4822 130 30621	1N4148
6415	4822 130 30621	1N4148
6416	4822 130 30621	1N4148
6417	4822 130 30621	1N4148



7401	4822 209 33593	TMP57CM20
7402	4822 209 31508	ST24C01
7403	5322 209 10421	HEF4094BP
7410	4822 130 44196	BC548C
7420 ^	5322 209 10421	HEF4094BP
7450 ^	4822 209 10262	HEF4051BP
7451 ^	4822 209 31515	BA3830S
7452 ^	4822 209 80797	LM393N
7460	4822 130 44196	BC548C

^ For Spectrum version only

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS - ETF3 BOARD



2650 *	4822 124 40248	10μF 20% 63V
2651 *	4822 124 40248	10μF 20% 63V
2652 *	4822 124 40242	1μF 20% 63V
2653 *	4822 124 40242	1μF 20% 63V
2654 *	4822 122 33891	3.3nF 10% 63V
2655 *	4822 122 33891	3.3nF 10% 63V
2656 *	5322 122 32452	47pF 5% 63V
2657 *	5322 122 32452	47pF 5% 63V
2658 *	5322 122 32452	47pF 5% 63V
2659 *	5322 122 32452	47pF 5% 63V
2660 *	4822 124 40244	2.2μF 20% 63V
2661 *	4822 124 40244	2.2μF 20% 63V
2668 *	5322 121 42498	680nF 5% 63V
2669 *	5322 121 42498	680nF 5% 63V
2672 *	4822 124 1525	100μF 20% 25V
2673 *	4822 124 1525	100μF 20% 25V
2674	4822 122 33496	100nF 10% 63V
2675	4822 122 33496	100nF 10% 63V
2676	5322 122 32531	100pF 5% 50V
2677	5322 122 32531	100pF 5% 50V
2678	4822 122 33515	82pF 5% 63V
2679	4822 122 33515	82pF 5% 63V
2680	4822 122 33575	220pF 5% 50V
2681	4822 122 33575	220pF 5% 50V
2682	4822 124 40242	1μF 20% 63V
2683	4822 124 40242	1μF 20% 63V
2684	5322 122 32452	47pF 5% 63V
2685	5322 122 32452	47pF 5% 63V
2686	5322 122 32659	33pF 5% 50V
2687	5322 122 32659	33pF 5% 50V
2688	4822 124 41525	100μF 20% 25V
2690 *	4822 124 40248	10μF 20% 63V
2692	4822 124 40242	1μF 20% 63V
2693	4822 124 40242	1μF 20% 63V
2700	5322 122 34099	470pF 10% 63V
2701	5322 122 34099	470pF 10% 63V
2702	4822 122 32535	680pF 10% 63V
2703	4822 122 32535	680pF 10% 63V
2704	5322 122 31863	330pF 5% 50V
2705	5322 122 31863	330pF 5% 50V
2706	5322 122 34099	470pF 10% 63V
2707	5322 122 34099	470pF 10% 63V
2708 *	4822 124 41525	100μF 20% 25V
2708 #	4822 124 41997	470μF 20% 10V
2709 *	4822 124 41525	100μF 20% 25V
2709 #	4822 124 41997	470μF 20% 10V
2710	4822 122 33128	15nF 10% 63V
2711	4822 122 33128	15nF 10% 63V
2712	5322 122 34123	1nF 10% 50V
2713	5322 122 34123	1nF 10% 50V
2714	4822 124 40248	10μF 20% 63V
2715	4822 124 40248	10μF 20% 63V

* For Dolby B version only

For Non-Dolby version only



2716	4822 124 41525	100μF 20% 25V
2717	4822 124 22263	220μF 20% 25V
2718	4822 124 40248	10μF 20% 63V
2730	4822 122 33515	82pF 5% 63V
2731	4822 122 33515	82pF 5% 63V
2732	4822 122 33806	820pF 10% 63V
2733	4822 122 33806	820pF 10% 63V
2734	5322 122 32654	22nF 10% 63V
2735	5322 122 32654	22nF 10% 63V
2736	4822 122 33177	10nF 20% 50V
2737	4822 122 33177	10nF 20% 50V
2738	4822 124 40242	1μF 20% 63V
2739	4822 124 40242	1μF 20% 63V
2740	4822 124 40246	4.7μF 20% 63V
2741	4822 124 40246	4.7μF 20% 63V
2742	4822 124 40242	1μF 20% 63V
2743	4822 124 40242	1μF 20% 63V
2744	5322 122 34123	1nF 10% 50V
2745	5322 122 34123	1nF 10% 50V
2746	4822 121 51252	470nF 5% 63V
2747	4822 121 51252	470nF 5% 63V
2748	4822 124 40248	10μF 20% 63V
2749	4822 124 40248	10μF 20% 63V
2750	4822 124 40433	47μF 20% 25V
2751	4822 124 40242	1μF 20% 63V
2752	5322 126 10223	4.7nF 10% 63V
2753	5322 126 10223	4.7nF 10% 63V
2754	5322 126 10223	4.7nF 10% 63V
2755	4822 124 41525	100μF 20% 25V
2756	4822 124 40246	4.7μF 20% 63V
2757	4822 124 22263	220μF 20% 25V
2760	5322 122 32659	33pF 5% 50V
2761	5322 122 32659	33pF 5% 50V
2762	5322 121 42975	15nF 5% 250V
2764	5322 126 10223	4.7nF 10% 63V
2765	4822 122 33177	10nF 20% 50V
2766	4822 124 40246	4.7μF 20% 63V
2768	4822 124 41525	100μF 20% 25V
2791	5322 122 34123	1nF 10% 50V
2796	5322 122 32654	22nF 10% 63V
2797	4822 124 40242	1μF 20% 63V
2799	4822 124 41584	100μF 20% 10V
2782	4822 122 33342	33nF 10% 63V
2787	4822 122 33342	33nF 10% 63V
2800	4822 124 41525	100μF 20% 25V
2808	4822 124 40244	2.2μF 20% 63V
2810	5322 122 34123	1nF 10% 50V
2811	5322 122 34123	1nF 10% 50V



3501 *	4822 051 10008	0Ω Jumper (1206)
3650 *	4822 051 20104	100k 5% 0.1W
3651 *	4822 051 20104	100k 5% 0.1W
3652 *	4822 100 11771	Trimmer 20k 30% 0.1W
3653 *	4822 100 11771	Trimmer 20k 30% 0.1W
3654 *	4822 100 11771	Trimmer 20k 30% 0.1W
3655 *	4822 100 11771	Trimmer 20k 30% 0.1W
3656	4822 051 10102	1k 2% 0.25W
3657	4822 051 10102	1k 2% 0.25W
3658 *	4822 050 11002	1k 1% 0.4W
3659 *	4822 050 11002	1k 1% 0.4W
3660 *	4822 050 11002	1k 1% 0.4W
3661 *	4822 050 11002	1k 1% 0.4W
3662 *	4822 051 20562	5k6 5% 0.1W
3663 *	4822 051 20562	5k6 5% 0.1W
3664	4822 051 20153	15k 5% 0.1W
3665	4822 051 20153	15k 5% 0.1W
3666	4822 116 52264	27k 5% 0.5W
3667	4822 116 52264	27k 5% 0.5W
3673 *	4822 051 20393	39k 5% 0.1W
3674 *	4822 052 10478 Δ	4Ω 7 5% 0.33W
3675	4822 051 20152	1k5 5% 0.1W
3678	4822 051 20474	470k 5% 0.1W
3679	4822 051 20474	470k 5% 0.1W
3680	4822 051 20152	1k5 5% 0.1W
3681	4822 051 20152	1k5 5% 0.1W
3682	4822 051 20471	470Ω 5% 0.1W
3684 #	4822 117 10833	10k 5% 0.1W
3685 #	4822 117 10833	10k 5% 0.1W
3686 #	4822 051 20123	12k 5% 0.1W
3687 #	4822 051 20123	12k 5% 0.1W
3688 *	4822 051 20332	3k3 5% 0.1W
3689 *	4822 051 20332	3k3 5% 0.1W
3694	4822 051 20223	22k 5% 0.1W
3695	4822 051 20223	22k 5% 0.1W
3696	4822 051 20223	22k 5% 0.1W
3697	4822 051 20223	22k 5% 0.1W
3698	4822 051 20153	15k 5% 0.1W
3699 *	4822 051 20392	3k9 5% 0.1W
3700	4822 116 52224	470Ω 5% 0.5W
3701	4822 116 52224	470Ω 5% 0.5W
3702	4822 051 20471	470Ω 5% 0.1W
3703	4822 116 52224	470Ω 5% 0.5W
3704	4822 051 20154	150k 5% 0.1W
3705	4822 051 20154	150k 5% 0.1W
3706 *	4822 051 20479	47Ω 5% 0.1W
3706 #	4822 051 20129	12Ω 5% 0.1W
3707 *	4822 051 20479	47Ω 5% 0.1W
3707 #	4822 051 20129	12Ω 5% 0.1W
3708	4822 116 52303	8k2 5% 0.5W
3709	4822 051 20822	8k2 5% 0.1W
3710	4822 116 52283	4k7 5% 0.5W



3711	4822 051 20472	4k7 5% 0.1W
3712	4822 116 52303	8k2 5% 0.5W
3713	4822 051 20822	8k2 5% 0.1W
3714	4822 116 52283	4k7 5% 0.5W
3715	4822 051 20472	4k7 5% 0.1W
3720	4822 051 20008	0Ω Jumper (0805)
3721	4822 051 20008	0Ω Jumper (0805)
3722	4822 116 52224	470Ω 5% 0.5W
3723	4822 116 52224	470Ω 5% 0.5W
3724	4822 116 52245	150k 5% 0.5W
3730	4822 116 52233	10k 5% 0.5W
3731	4822 116 52233	10k 5% 0.5W
3732	4822 116 52175	100Ω 5% 0.5W
3733	4822 116 52175	100Ω 5% 0.5W
3734	4822 116 52284	47k 5% 0.5W
3735	4822 116 52284	47k 5% 0.5W
3736	4822 116 52233	10k 5% 0.5W
3737	4822 116 52233	10k 5% 0.5W
3738	4822 100 11771	Trimmer 20k 30% 0.1W
3739	4822 100 11771	Trimmer 20k 30% 0.1W
3740	4822 051 20562	5k6 5% 0.1W
3741	4822 051 20562	5k6 5% 0.1W
3742	4822 051 20223	22k 5% 0.1W
3743	4822 051 20223	22k 5% 0.1W
3744	4822 051 20123	12k 5% 0.1W
3745	4822 051 10102	1k 2% 0.25W
3746	4822 051 10102	1k 2% 0.25W
3747	4822 051 10102	1k 2% 0.25W
3748	4822 116 52271	33k 5% 0.5W
3749	4822 116 52219	330Ω 5% 0.5W
3760	4822 051 20109	10Ω 5% 0.1W
3761	4822 051 20109	10Ω 5% 0.1W
3762	4822 100 11163	Trimmer 100k 30% 0.1W
3763	4822 100 11163	Trimmer 100k 30% 0.1W
3764	4822 051 20339	33Ω 5% 0.1W
3765	4822 051 20682	6k8 5% 0.1W
3766	4822 051 20159	15Ω 5% 0.1W
3767	4822 051 20223	22k 5% 0.1W
3768	4822 051 10102	1k 2% 0.25W
3769	4822 117 10833	10k 1% 0.1W
3770	4822 051 20392	3k9 5% 0.1W
3771	4822 051 20221	220Ω 5% 0.1W
3772	4822 117 10833	10k 1% 0.1W
3773	4822 052 10478 Δ	4Ω 7 5% 0.33W
3774	4822 116 52257	22k 5% 0.5W
3780	4822 051 20822	8k2 5% 0.1W
3781	4822 116 52296	6k8 5% 0.5W
3782	4822 100 11319	Trimmer 4k7 30% 0.1W
3783	4822 100 11319	Trimmer 4k7 30% 0.1W
3784	4822 116 52283	4k7 5% 0.5W
3785	4822 051 10102	1k 2% 0.25W
3786	4822 051 10102	1k 2% 0.25W



3787	4822 051 10102	1k 2% 0.25W
3788	4822 051 20104	100k 5% 0.1W
3789	4822 051 20104	100k 5% 0.1W
3790	4822 051 20104	100k 5% 0.1W
3791	4822 116 52284	47k 5% 0.5W
3792	4822 116 52284	47k 5% 0.5W
3793	4822 116 52284	47k 5% 0.5W
3794	4822 051 20183	18k 5% 0.1W
3795	4822 051 20183	18k 5% 0.1W
3796	4822 050 11002	1k 1% 0.4W
3797	4822 050 11002	1k 1% 0.4W
3798	4822 116 52175	100Ω 5% 0.5W
3799	4822 050 11002	1k 1% 0.4W
3800	4822 050 11002	1k 1% 0.4W
3801	4822 050 11002	1k 1% 0.4W
3802	4822 050 11002	1k 1% 0.4W
3803	4822 116 52175	100Ω 5% 0.5W
3804	4822 116 52215	220Ω 5% 0.5W
3805	4822 051 10102	1k 2% 0.25W
3806	4822 117 10833	10k 1% 0.1W
3807	4822 051 20472	4k7 5% 0.1W
3808	4822 117 10833	10k 1% 0.1W
3809	4822 117 10833	10k 1% 0.1W
3810	4822 117 10833	10k 1% 0.1W
3811	4822 051 20472	4k7 5% 0.1W
3812	4822 051 20392	3k9 5% 0.1W
3813	4822 117 10833	10k 1% 0.1W
3814	4822 051 20105	1M 5% 0.1W
3822	4822 050 11002	1k 1% 0.4W
3823	4822 050 11002	1k 1% 0.4W
3824	4822 050 11002	1k 1% 0.4W
3825	4822 050 11002	1k 1% 0.4W
3826	4822 050 11002	1k 1% 0.4W
3827	4822 117 10834	47k 1% 0.1W
3828	4822 117 10833	10k 1% 0.1W
3829	4822 051 10102	1k 2% 0.25W
3830	4822 051 10102	1k 2% 0.25W
3831	4822 051 10102	1k 2% 0.25W
3833 *	4822 117 10833	10k 1% 0.1W
3836	4822 051 10102	1k 2% 0.25W
3837 *	4822 116 52233	10k 5% 0.5W
3839	4822 052 10159 Δ	15Ω 5% 0.33W
3840	4822 116 52233	10k 5% 0.5W
3841	4822 116 52283	4k7 5% 0.5W
3842	4822 051 20223	22k 5% 0.1W
3844	4822 051 20223	22k 5% 0.1W
3856	4822 116 52233	10k 5% 0.5W
3857	4822 117 10833	10k 1% 0.1W
3858	4822 051 20474	470k 5% 0.1W
3859	4822 117 10833	10k 1% 0.1W
3860	4822 051 20223	22k 5% 0.1W
3861	4822 051 20223	22k 5% 0.1W

* For Dolby B version only

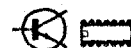
For Non-Dolby version only



3864 *	4822 051 20008	0Ω Jumper (0805)
3865	4822 051 20008	0Ω Jumper (0805)
5650 *	4822 156 21725	MPX Filter
5651 *	4822 156 21725	MPX Filter
5652	4822 156 20811	Coil 36mH 5%
5653	4822 156 20811	Coil 36mH 5%
5730	4822 156 20811	Coil 36mH 5%
5731	4822 156 20811	Coil 36mH 5%
5760	4822 156 20946	Osc coil 100kHz
5780	4822 242 72527	Cer Resonator 4MHz
5790	4822 157 53941	Coil 100μH 10%



6650	4822 130 34233	BZX79-C5V1
6760	4822 130 61219	BZX79-C10V
6780	5322 130 30684	1N4002
6781	5322 130 30684	1N4002
6782	4822 130 30621	1N4148
6783	4822 130 30621	1N4148
6784	4822 130 30621	1N4148



7650	4822 209 32919	HEF4952BT
7651 *	4822 209 72546	CXA1101P
7652	5322 130 42136	BC848C
7653	5322 130 42136	BC848C
7654	5322 130 42136	BC848C
7655	5322 130 42136	BC848C
7656	5322 130 42136	BC848C
7657	5322 130 42136	BC848C
7700	4822 209 32919	HEF4952BT
7701	4822 209 61667	UPC1330HA
7702	4822 209 32918	AN7318S
7703	5322 209 11102	HEF4052BT
7730	4822 209 31505	CXA1298AP
7760	5322 130 44779	BC338-40
7761	5322 130 44779	BC338-40
7762	4822 130 44196	BC548C
7763	4822 130 44196	BC548C
7764	4822 130 42682	DTA144ES
7765	4822 130 60588	DTC114ES
7780	4822 130 41715	BC328-40
7781	4822 130 41715	BC328-40
7782	4822 130 41715	BC328-40
7783	5322 130 42136	BC848C
7784	5322 130 42136	BC848C
7785	5322 130 42136	BC848C
7786	4822 130 42513	BC858C
7787	5322 130 42136	BC848C
7791	5322 130 42136	BC848C
7792	4822 209 72042	MC78L05ACP
7793	4822 209 12612	MC68HC05C4P

* For Dolby B version only
For Non-Dolby version only

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS - COMBI BOARD

MISCELLANEOUS

1281	4822 272 10269	Voltage Selector for /21
1284	4822 071 51002 Δ	Fuse T1A 250V
1284	4822 253 30334 Δ	Fuse T1.25A 250V for /37
1285	4822 071 51002 Δ	Fuse T1A 250V
1285	4822 253 30334 Δ	Fuse T1.25A 250V for /37
1286	4822 071 51002 Δ	Fuse T1A 250V
1286	4822 253 30334 Δ	Fuse T1.25A 250V for /37
1287	4822 071 51002 Δ	Fuse T1A 250V
1287	4822 253 30334 Δ	Fuse T1.25A 250V for /37
1288	4822 071 54002 Δ	Fuse T4A 250V
1288	4822 071 55002 Δ	Fuse T5A 250V for /37
1289	4822 071 54002 Δ	Fuse T4A 250V
1289	4822 071 55002 Δ	Fuse T5A 250V for /37
1304	4822 267 31176	Loudspeaker Socket
1497	4822 134 41171	Lamp Assy BLUE
1498	4822 134 41171	Lamp Assy BLUE
1499	4822 134 41171	Lamp Assy BLUE
1550	4822 267 40898	Headphone Socket
1551 #	4822 267 40898	Mic Socket for
1552	4822 267 30631	AUX/TV Socket
1553 #	4822 276 12571	Vocal Fade Switch
1562 #	4822 267 40898	Mic Socket



2252	5322 121 42386	100nF 5% 63V
2253	5322 121 42386	100nF 5% 63V
2254	4822 124 41397	47μF 20% 25V
2255	4822 126 10781	470pF 50V
2256	4822 126 11585	22nF +80-20% 25V
2258	5322 121 42386	100nF 5% 63V
2259	5322 121 42386	100nF 5% 63V
2260	4822 124 80148	2200μF 20% 16V
2262	4822 124 40849	330μF 20% 16V
2263	4822 124 40244	2.2μF 20% 63V
2264	5322 121 42386	100nF 5% 63V
2265	4822 124 41643	100μF 20% 16V
2266	4822 124 40248	10μF 20% 63V
2267	4822 124 41397	47μF 20% 25V
2268	4822 124 41993	2200μF 20% 35V
2271	4822 124 42367	3300μF 20% 35V
2272	4822 124 42367	3300μF 20% 35V
2274	5322 121 42386	100nF 5% 63V
2275	5322 121 42386	100nF 5% 63V
2277	4822 121 42007	100nF 10% 100V
2364	4822 124 40804	22μF 20% 63V
2365	4822 126 12785	47nF TUB 50V
2366	4822 124 80196	47μF 20% 50V
2367	4822 126 12785	47nF TUB 50V
2368	4822 124 42245	22μF 20% 63V
2369	4822 124 40239	0.47μF 20% 63V
2370	4822 124 40239	0.47μF 20% 63V



2371	4822 124 40244	2.2μF 20% 63V
2372	4822 124 40244	2.2μF 20% 63V
2373	4822 122 33519	470pF 10% 50V
2374	4822 122 33519	470pF 10% 50V
2375	4822 124 41397	47μF 20% 25V
2376	4822 124 41397	47μF 20% 25V
2377	4822 122 10459	560pF 10% 50V
2378	4822 122 10459	560pF 10% 50V
2379	4822 122 33197	1nF 10% 50V
2380	4822 122 33197	1nF 10% 50V
2385	4822 126 12145	47nF 10% 25V
2386	4822 126 12145	47nF 10% 25V
2387	4822 124 80196	47μF 20% 50V
2388	4822 124 80196	47μF 20% 50V
2389	4822 121 41854	150nF 5% 63V
2390	4822 121 41854	150nF 5% 63V
2391	4822 124 40239	0.47μF 20% 63V
2392	4822 124 40239	0.47μF 20% 63V
2501	4822 122 33195	100pF 10% 50V
2502	4822 122 33195	100pF 10% 50V
2505	4822 126 12339	2.2nF 10%
2506	4822 126 12339	2.2nF 10%
2507	4822 122 33519	470pF 10% 50V
2508	4822 122 33519	470pF 10% 50V
2509	4822 124 41398	1μF 20% 63V
2510	4822 124 41398	1μF 20% 63V
2511	4822 124 41398	1μF 20% 63V
2512	4822 124 41398	1μF 20% 63V
2513	4822 122 33197	1nF 10% 50V
2514	4822 122 33197	1nF 10% 50V
2515	4822 124 41398	1μF 20% 63V
2516	4822 124 41398	1μF 20% 63V
2517	4822 122 33195	100pF 10% 50V
2518	4822 122 33195	100pF 10% 50V
2519	4822 124 41398	1μF 20% 63V
2520	4822 124 41398	1μF 20% 63V
2521	4822 126 12145	47nF 10% 25V
2522	4822 126 12145	47nF 10% 25V
2523	4822 124 40246	4.7nF 20% 63V for /21
2524	4822 124 40246	4.7nF 20% 63V for /21
2552	4822 124 41643	100μF 20% 16V
2571	4822 122 33069	33pF 5% 50V
2572	4822 124 40196	220μF 20% 16V
2575	4822 124 41398	1μF 20% 63V
2576	4822 124 41398	1μF 20% 63V
2577	4822 124 41398	1μF 20% 63V
2578	4822 124 41398	1μF 20% 63V
2579	4822 124 41398	1μF 20% 63V
2580	4822 124 41398	1μF 20% 63V
2581	4822 124 41398	1μF 20% 63V
2582	4822 124 41398	1μF 20% 63V
2583	4822 126 12333	100nF 20% 25V



2584	4822 126 12333	100nF 20% 25V
2585	4822 121 51252	470nF 5% 63V
2586	4822 121 51252	470nF 5% 63V
2587	4822 126 12145	47nF 10% 25V
2587	4822 121 41984	47nF 10% 400V for /37
2588	4822 126 12145	47nF 10% 25V
2588	4822 121 41984	47nF 10% 400V for /37
2591	4822 122 10577	3.3nF 10% 16V
2592	4822 122 10577	3.3nF 10% 16V
2593	5322 121 42662	68nF 5% 250V
2594	5322 121 42662	68nF 5% 250V
2595	4822 126 12145	47nF 10% 25V
2596	4822 126 12145	47nF 10% 25V
2597	4822 126 12333	100nF 20% 25V
2600	4822 124 40196	220μF 20% 16V
2601	4822 126 12333	100nF 20% 25V
2602	4822 126 12333	100nF 20% 25V
2603	4822 124 40248	10μF 20% 63V
2605	4822 124 41643	100μF 20% 16V
2607	4822 122 33195	100pF 10% 50V
2608	4822 122 33195	100pF 10% 50V
2609	4822 126 10778	220pF 50V
2613	4822 122 33195	100pF 10% 50V
2614	4822 122 33195	100pF 10% 50V
2615	4822 122 31072	47pF 2% 100V
2616	4822 122 33197	1nF 10% 50V
2629	4822 124 41643	100μF 20% 16V
2630 #	5322 121 42661	330nF 5% 63V
2631 #	5322 121 42661	330nF 5% 63V
2632 #	4822 124 40244	2.2μF 20% 63V
2633 #	4822 124 40244	2.2μF 20% 63V
2634 #	5322 121 42662	68nF 5% 250V
2635 #	5322 121 42662	68nF 5% 250V
2636 #	4822 124 40244	2.2μF 20% 63V
2637 #	4822 124 40244	2.2μF 20% 63V
2638	4822 124 41398	1μF 20% 63V not for /37
2640 #	4822 124 41643	100μF 20% 16V
2641 #	4822 124 41643	330μF 20% 16V
2642 #	4822 124 41643	100μF 20% 16V
2643 #	4822 124 40246	4.7μF 20% 63V
2644 #	4822 122 33069	33pF 5% 50V
2645 #	4822 124 40246	4.7μF 20% 63V
2646 #	4822 122 33069	33pF 5% 50V
2647 #	4822 124 40244	2.2μF 20% 63V
2648 #	4822 124 40246	4.7μF 20% 63V
2649 #	4822 126 11585	22nF +80-20% 25V
2650 #	4822 126 11585	22nF +80-20% 25V
2651 #	4822 126 12147	22nF 10% 25V
2652 #	4822 126 12787	330pF 10% 50V
2653 #	4822 126 12787	330pF 10% 50V
2654 #	4822 122 33195	100pF 10% 50V
2655 #	4822 122 33195	100pF 10% 50V

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2656 #	4822 122 33197	1nF 10% 50V
2657	4822 124 41398	1μF 20% 63V
2658 #	4822 122 33197	1nF 10% 50V
2659 #	4822 122 33848	47pF 5% 50V
2661	4822 122 33849	150pF 10% 50V not for /30
2662	4822 122 33849	150pF 10% 50V not for /30



3251	4822 116 52233	10k 5% 0.5W
3252	4822 116 52233	10k 5% 0.5W
3254	4822 116 52283	4k7 5% 0.5W
3255	4822 050 11002	1k 1% 0.4W
3256	4822 050 11002	1k 1% 0.4W
3257	4822 116 52233	10k 5% 0.5W
3258	4822 116 52283	4k7 5% 0.5W
3259	4822 116 52277	39k 5% 0.5W
3260	4822 116 52256	2k2 5% 0.5W
3261	4822 116 52284	47k 5% 0.5W
3262	4822 050 11002	1k 1% 0.4W
3263	4822 116 52283	4k7 5% 0.5W
3264	4822 116 52234	100k 5% 0.5W
3265	4822 116 52233	10k 5% 0.5W
3266	4822 050 11002	1k 1% 0.4W
3267	4822 116 52175	100Ω 5% 0.5W
3268	4822 116 52233	10k 5% 0.5W
3269	4822 116 52233	10k 5% 0.5W
3270	4822 116 52233	10k 5% 0.5W
3271	4822 050 11002	1k 1% 0.4W
3301	4822 116 52256	2k2 5% 0.5W
3303	4822 116 52234	100k 5% 0.5W
3304	4822 116 52263	2k7 5% 0.5W
3305	4822 050 21008	1Ω 1% 0.6W
3306	4822 050 21008	1Ω 1% 0.6W not for /21
3307	4822 050 21008	1Ω 1% 0.6W not for /21
3308	4822 050 21008	1Ω 1% 0.6W
3309	4822 050 21008	1Ω 1% 0.6W
3310	4822 050 21008	1Ω 1% 0.6W
3311	4822 050 21008	1Ω 1% 0.6W
3312	4822 050 21008	1Ω 1% 0.6W
3313	4822 050 21008	1Ω 1% 0.6W
3314	4822 050 21008	1Ω 1% 0.6W
3315	4822 116 52264	27k 5% 0.5W
3316	4822 116 52264	27k 5% 0.5W
3351	4822 053 10221	220Ω 5% 1W
3360	4822 052 10101 Δ	100Ω 5% 0.33W
3361	4822 050 11002	1k 1% 0.4W
3362	4822 050 11002	1k 1% 0.4W
3363	4822 116 52263	2k7 5% 0.5W
3368	4822 113 80525 Δ	15 10% 3W
3371	4822 116 52233	10k 5% 0.5W
3372	4822 116 52233	10k 5% 0.5W



3373	4822 116 52291	56k 5% 0.5W
3374	4822 116 52291	56k 5% 0.5W
3375	4822 116 52224	470Ω 5% 0.5W
3376	4822 116 52224	470Ω 5% 0.5W
3377	4822 052 10478 Δ	4Ω 7 5% 0.33W
3378	4822 052 10478 Δ	4Ω 7 5% 0.33W
3379	4822 116 52256	2k2 5% 0.5W
3380	4822 116 52256	2k2 5% 0.5W
3381	4822 116 52256	2k2 5% 0.5W
3382	4822 116 52256	2k2 5% 0.5W
3383	4822 052 10108 Δ	1Ω 5% 0.33W
3384	4822 052 10108 Δ	1Ω 5% 0.33W
3385	4822 116 52291	56k 5% 0.5W
3386	4822 116 52291	56k 5% 0.5W
3387	4822 116 52213	180Ω 5% 0.5W
3388	4822 116 52213	180Ω 5% 0.5W
3389	4822 116 52217	270Ω 5% 0.5W
3390	4822 116 52217	270Ω 5% 0.5W
3397	4822 116 52291	56k 5% 0.5W
3398	4822 116 52291	56k 5% 0.5W
3399	4822 116 52244	15k 5% 0.5W
3400	4822 116 52244	15k 5% 0.5W
3501	4822 116 52231	820Ω 5% 0.5W for /21/37
3501	4822 116 52296	6k8 5% 0.5W
3502	4822 116 52231	820Ω 5% 0.5W for /21/37
3502	4822 116 52296	6k8 5% 0.5W
3503	4822 116 52257	22k 5% 0.5W for /21/37
3503	4822 116 52244	15k 5% 0.5W
3504	4822 116 52257	22k 5% 0.5W for /21/37
3504	4822 116 52244	15k 5% 0.5W
3505	4822 116 52224	470Ω 5% 0.5W
3506	4822 116 52224	470Ω 5% 0.5W
3507	4822 116 52243	2k2 5% 0.5W
3508	4822 116 52243	2k2 5% 0.5W
3509	4822 116 52296	6k8 5% 0.5W
3510	4822 116 52296	6k8 5% 0.5W
3511	4822 116 52249	1k8 5% 0.5W
3512	4822 116 52249	1k8 5% 0.5W
3513	4822 116 52235	1M 5% 0.5W
3514	4822 116 52235	1M 5% 0.5W
3515	4822 116 52235	1M 5% 0.5W
3516	4822 116 52235	1M 5% 0.5W
3517	4822 116 52269	3k3 5% 0.5W
3518	4822 116 52269	3k3 5% 0.5W
3519	4822 116 52238	12k 5% 0.5W
3520	4822 116 52238	12k 5% 0.5W
3521	4822 116 52276	3k9 5% 0.5W
3522	4822 116 52276	3k9 5% 0.5W
3523	4822 116 52175	100Ω 5% 0.5W
3524	4822 116 52175	100Ω 5% 0.5W
3527	4822 116 52235	1M 5% 0.5W
3528	4822 116 52235	1M 5% 0.5W

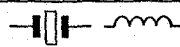


3529	4822 116 52269	3k3 5% 0.5W
3530	4822 116 52269	3k3 5% 0.5W
3531	4822 050 11002	1k 1% 0.4W
3532	4822 050 11002	1k 1% 0.4W
3535	4822 116 52224	470Ω 5% 0.5W
3536	4822 116 52224	470Ω 5% 0.5W
3537	4822 116 52224	470Ω 5% 0.5W
3538	4822 050 11002	1k 1% 0.4W
3539	4822 050 11002	1k 1% 0.4W
3541	4822 116 52235	1M 5% 0.5W
3542	4822 116 52235	1M 5% 0.5W
3543	4822 052 10339 Δ	33Ω 5% 0.33W
3545	4822 116 52265	270k 5% 0.5W not for /37
3546	4822 116 52265	270k 5% 0.5W not for /37
3547	4822 116 52269	3k3 5% 0.5W
3548	4822 116 52269	3k3 5% 0.5W
3549	4822 052 10339 Δ	33Ω 5% 0.33W
3554	4822 050 11002	1k 1% 0.4W
3555	4822 116 52234	100k 5% 0.5W
3556	4822 050 11002	1k 1% 0.4W
3557	4822 116 52233	10k 5% 0.5W
3565	4822 116 52263	2k7 5% 0.5W
3566	4822 116 52263	2k7 5% 0.5W
3567	4822 116 52222	390Ω 5% 0.5W
3568	4822 116 52222	390Ω 5% 0.5W
3569	4822 116 52235	1M 5% 0.5W
3570	4822 116 52235	1M 5% 0.5W
3571	4822 116 52271	33k 5% 0.5W
3572	4822 052 10339 Δ	33Ω 5% 0.33W
3573	4822 116 52256	2k2 5% 0.5W
3574	4822 116 52256	2k2 5% 0.5W
3575	4822 116 52243	1k5 5% 0.5W
3576	4822 116 52243	1k5 5% 0.5W
3577	4822 116 52292	560k 5% 0.5W
3578	4822 116 52292	560k 5% 0.5W
3579	4822 116 52271	33k 5% 0.5W
3580	4822 116 52271	33k 5% 0.5W
3581	4822 116 52271	33k 5% 0.5W
3582	4822 116 52271	33k 5% 0.5W
3583	4822 116 52271	33k 5% 0.5W
3584	4822 116 52271	33k 5% 0.5W
3585	4822 116 52233	10k 5% 0.5W
3587	4822 116 52285	470k 5% 0.5W
3588	4822 116 52285	470k 5% 0.5W
3589	4822 116 52285	470k 5% 0.5W
3590	4822 116 52285	470k 5% 0.5W
3591	4822 116 52285	470k 5% 0.5W
3592	4822 116 52285	470k 5% 0.5W
3593	4822 116 52285	470k 5% 0.5W
3594	4822 116 52285	470k 5% 0.5W
3595	4822 116 52292	560k 5% 0.5W
3596	4822 116 52292	560k 5% 0.5W



3597	4822 116 52222	390Ω 5% 0.5W
3598	4822 116 52222	390Ω 5% 0.5W
3599	4822 116 52243	1k5 5% 0.5W
3600	4822 116 52243	1k5 5% 0.5W
3601	4822 116 52257	22k 5% 0.5W
3602	4822 116 52257	22k 5% 0.5W
3607	4822 116 52285	470k 5% 0.5W
3608	4822 116 52285	470k 5% 0.5W
3609	4822 116 52285	470k 5% 0.5W
3610	4822 116 52285	470k 5% 0.5W
3611	4822 116 52235	1M 5% 0.5W
3612	4822 116 52235	1M 5% 0.5W
3613	4822 050 11002	1k 1% 0.4W
3614	4822 050 11002	1k 1% 0.4W
3615	4822 116 52215	220Ω 5% 0.5W
3616	4822 116 52215	220Ω 5% 0.5W
3617	4822 116 52215	220Ω 5% 0.5W
3618	4822 116 52215	220Ω 5% 0.5W
3619	4822 050 11002	1k 1% 0.4W
3620	4822 050 11002	1k 1% 0.4W
3621	4822 050 11002	1k 1% 0.4W
3622	4822 050 11002	1k 1% 0.4W
3623	4822 116 52257	22k 5% 0.5W
3624	4822 116 52257	22k 5% 0.5W
3625	4822 116 52263	2k7 5% 0.5W
3626	4822 116 52263	2k7 5% 0.5W
3627	4822 116 52222	390Ω 5% 0.5W
3628	4822 116 52222	390Ω 5% 0.5W
3629	4822 102 10414	Trimmer 20k X 2 20% 0.05W
3630 #	4822 116 52251	18k 5% 0.5W
3631 #	4822 116 52251	18k 5% 0.5W
3632 #	4822 116 52234	100k 5% 0.5W
3633 #	4822 116 52234	100k 5% 0.5W
3634 #	4822 116 52265	270k 5% 0.5W
3635 #	4822 116 52265	270k 5% 0.5W
3636 #	4822 116 52289	5k6 5% 0.5W
3637 #	4822 116 52289	5k6 5% 0.5W
3638 #	4822 116 52263	2k7 5% 0.5W
3639 #	4822 116 52263	2k7 5% 0.5W
3640 #	4822 116 52303	8k2 5% 0.5W
3641 #	4822 116 52303	8k2 5% 0.5W
3642 #	4822 116 52244	15k 5% 0.5W
3643 #	4822 116 52244	15k 5% 0.5W
3644 #	4822 116 52234	100k 5% 0.5W
3645 #	4822 116 52234	100k 5% 0.5W
3646 #	4822 116 52234	100k 5% 0.5W
3647 #	4822 116 52234	100k 5% 0.5W
3648	4822 116 52235	1M 5% 0.5W not for /37
3649	4822 116 52249	1k8 5% 0.5W not for /37
3652 #	4822 116 81682	2M2 5% 0.5W
3653 #	4822 116 81682	2M2 5% 0.5W

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3654 #	4822 116 52249	1k8 5% 0.5W
3655 #	4822 116 52249	1k8 5% 0.5W
3656 #	4822 116 52219	330Ω 5% 0.5W
3657 #	4822 116 52219	330Ω 5% 0.5W
3658 #	4822 116 52175	100Ω 5% 0.5W
3659 #	4822 116 52175	100Ω 5% 0.5W
3661 #	4822 116 52207	1k2 5% 0.5W
3662 #	4822 116 52251	10k 5% 0.5W
3663 #	4822 116 52228	680Ω 5% 0.5W
3664 #	4822 116 52249	1k8 5% 0.5W
3665 #	4822 116 52283	4k7 5% 0.5W
3666 #	4822 116 52224	470Ω 5% 0.5W
3667 #	4822 116 52269	3k3 5% 0.5W
3668 #	4822 116 52245	150k 5% 0.5W
3669 #	4822 116 52258	220k 5% 0.5W
3671 #	4822 116 52234	100k 5% 0.5W
3672 #	4822 116 52234	100k 5% 0.5W
3673 #	4822 101 21204	Potm. Rotary 20KA
3674 #	4822 116 52207	1k2 5% 0.5W
3675 #	4822 052 10479 Δ	47Ω 5% 0.33W
3676 #	4822 116 52207	1k2 5% 0.5W
3677 #	4822 116 52233	10k 5% 0.5W
3678 #	4822 116 52233	10k 5% 0.5W
3679 #	4822 116 52233	10k 5% 0.5W
3680	4822 116 52284	47k 5% 0.5W
3681	4822 050 11002	1k 1% 0.4W
3682	4822 050 11002	1k 1% 0.4W
3683	4822 050 11002	1k 1% 0.4W
3684	4822 050 11002	1k 1% 0.4W
3685	4822 050 11002	1k 1% 0.4W
3686	4822 050 11002	1k 1% 0.4W
3878	4822 051 10102	1k 2% 0.25W
		
5280	4822 146 31377	Mains Transformer
5281	4822 157 70003	Mains Choke Coil
5313	4822 280 80777	Relay
5373	4822 156 21721	2.2μH 20%
5374	4822 156 21721	2.2μH 20%
5630 #	4822 157 62552	2.2μH 20%
5631 #	4822 157 62552	2.2μH 20%
5632	4822 156 21125	3.9μH 10%
		
6250	4822 130 82078 Δ	D5SBA20
6251	4822 130 30621	1N4148
6252	4822 130 30621	1N4148
6253	4822 130 34173	BZX79-C5V6
6254	4822 130 30621	1N4148
6255	5322 130 30684 Δ	1N4002
6256	5322 130 30684 Δ	1N4002 for /37
6257	5322 130 30684 Δ	1N4002
6258	5322 130 30684 Δ	1N4002
6259	4822 130 30621	1N4148
6260	5322 130 30684 Δ	1N4002
6261	4822 130 34233	BZX79-C5V1
6262	5322 130 30684 Δ	1N4002
6263	5322 130 30684 Δ	1N4002
6264	5322 130 30684 Δ	1N4002
6265	4822 130 31253	BZX79-C2V4

		
6266	4822 130 30621	1N4148
6352	4822 130 30621	1N4148
6504	4822 130 30621	1N4148
6505	4822 130 30621	1N4148
6507	4822 130 30861	BZX79-C7V5
6508	4822 130 30861	BZX79-C7V5
		
7250	4822 130 40937	BC548B
7252	4822 130 61236	BD234
7253	4822 130 40937	BC548B
7254	4822 130 40937	BC548B
7255	4822 130 44197	BC558B
7256	4822 130 40937	BC548B
7257	4822 209 80891 Δ	MC7805CT
7318	4822 130 44197	BC558B
7319	4822 130 40937	BC548B
7320	4822 130 40937	BC548B
7350	4822 209 31514 Δ	STK4132II
7501	4822 209 10263	4052B
7502	5322 209 10421	HEF4094BP
7503	4822 130 44246	BC549C
7504	4822 130 44246	BC549C
7505	4822 130 44246	BC549C
7506	4822 130 44246	BC549C
7513	5322 130 44779	BC338-40
7514	5322 130 44779	BC338-40
7521	5322 130 44779	BC338-40
7522	5322 130 44779	BC338-40
7523	4822 130 41715	BC328-40
7524	4822 130 41715	BC328-40
7525	4822 130 40937	BC548B
7526	4822 130 40937	BC548B
7529	4822 130 40937	BC548B
7530	4822 130 40937	BC548B
7571	4822 130 44197	BC558B
7572	4822 130 44197	BC558B
7575	4822 130 44246	BC549C
7576	4822 130 44246	BC549C
7577	4822 130 44246	BC549C
7578	4822 130 44246	BC549C
7581	5322 209 14865	MC14066BCP
7582	5322 209 14865	MC14066BCP
7583	4822 130 41327	BC327-40
7630 #	4822 130 44246	BC549C
7631 #	4822 130 44246	BC549C
7632 #	4822 130 44246	BC549C
7633 #	4822 130 44246	BC549C
7634 #	4822 130 44246	BC549C
7635 #	4822 130 44246	BC549C
7637	4822 130 44246	BC549C not for /37

For Karaoke version only
 Note: Only the parts mentioned in this list are normal service spare parts.



Figure 3. Wire with hook at the end

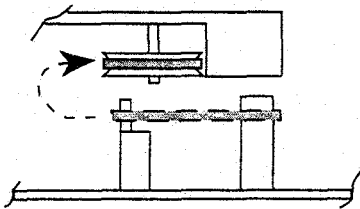


Figure 4. Hook belt onto pulley

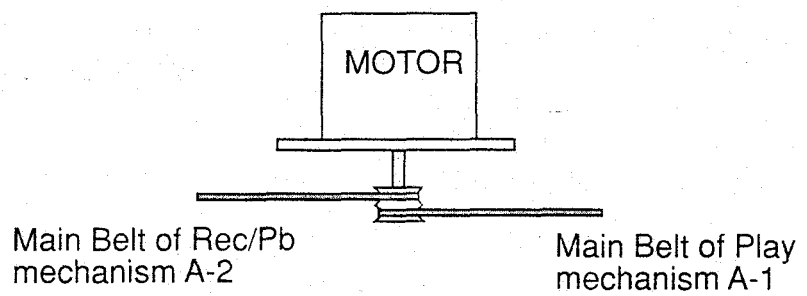


Figure 5. Motor pulley Belt hooking

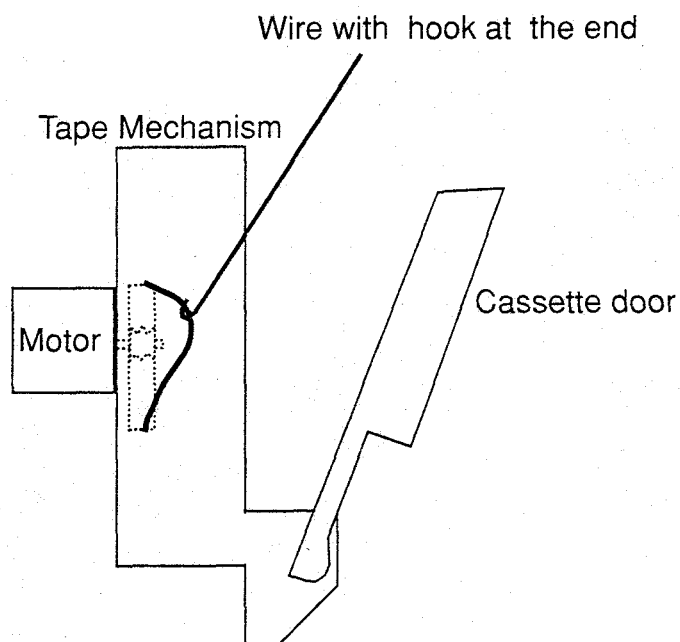


Figure 6. Hooking of the belt onto the motor pulley

Procedure to replace belts/mechanisms

1. Remove the damper gear assembly (pos 13 + 14) and gear lever (pos 9).
2. Remove 4 screws (pos 5) and Playback mechanism (pos A-1) and Rec/Pb mechanism pos (A-2) can now be separated.

Note: The assembly of main belt for the Rec/Pb mechanism must always be done before that of Playback mechanism.

3A. Record/Pb Mechanism A-2

- i) Unscrew 4 screws (pos 85 + 86) and remove the cover bracket (pos 41).
- ii) Route the belt as shown in figure 1 around the temporary pins (see arrow).
- iii) Assemble the cover bracket (pos 41), care should be taken not to loosen the belt.
- iv) Assemble the motor bracket assembly (pos 1 + 3) onto the Rec/Pb mechanism.
- v) Use a wire with a hook end (see figure 3), transfer the belt from the temporary position onto the motor pulley (pos 1) as in figure 5 & 6.

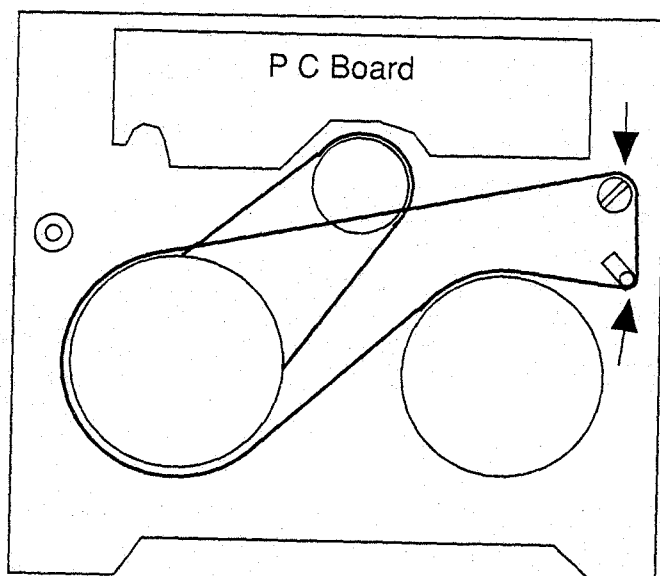


Figure 1. Rec/Pb mechanism A-2

2B. Playback Mechanism A-1

- i) Place a piece of tape to hold the eject lever (pos 11) to bracket (pos 16) and remove the door catch (pos 12).
 - ii) Unscrew 4 screws (pos 85 + 86) and remove the cover bracket (pos 41).
 - iii) Route the belt as shown in figure 2 around the temporary pins (see arrow).
 - iv) Assemble the cover bracket (pos 41), care should be taken not to loosen the belt.
 - v) Assemble the Playback mechanism A-1 onto the rest of the tape mechanism.
 - vi) Use a wire with a hook end (see figure 3), transfer the belt from the temporary position onto the motor pulley (pos 1) and the small pulley (pos 42) on cover bracket as in figure 4 - 6.
 - vii) Remove the tape on the eject lever and assemble door catch (pos 12).
3. Assemble the damper gear assembly (pos 13 + 14) and gear lever (pos 9).
 4. After completion, perform the tape adjustment to ensure no mis-alignment due to handling.

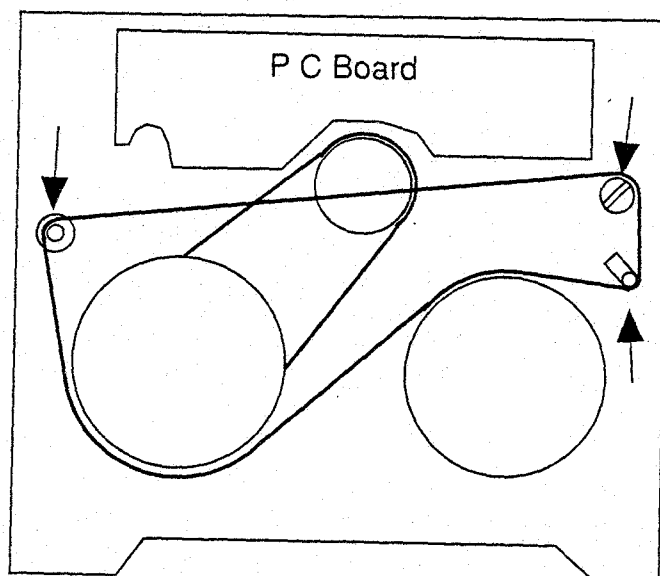


Figure 2. Play mechanism A-1

CDC MECHANISM REPAIR HINTS

A. Procedure to remove the CDC from the set. (Refer to set disassembly drawing)

1. To open the CD tray, turn the PULLEY A(see Fig.1) clockwise.
2. Remove the nose piece (position no.264)
3. Unscrew the two mounting screws at the rear of the CDC and remove the CDC.

B. If the CD tray is jammed,

1. Unplug connector from socket 1802(refer to CD circuits).
2. Apply 5V across PIN 3 & 4 to bring the CD mechanism down.

CAUTION : Tray can only opened when CD mechanism is down
and before GEAR C & D disengage.

3. Apply 5V across PIN 1 & 2 to bring the tray out.
4. Proceed with A.

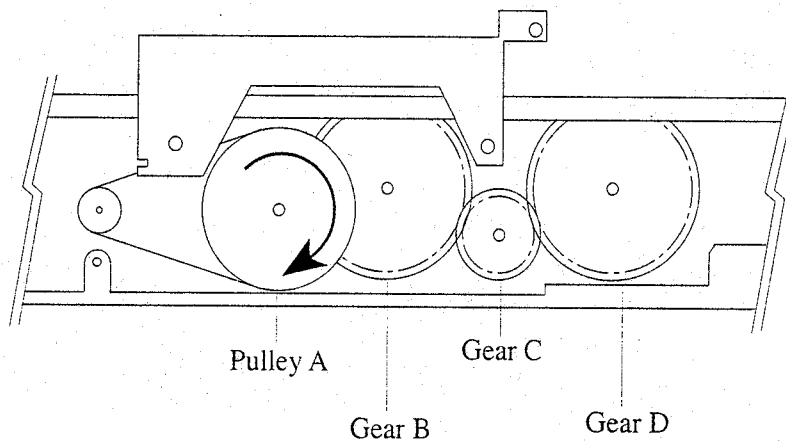


Fig. 1 Right-side view of CDC mechanism

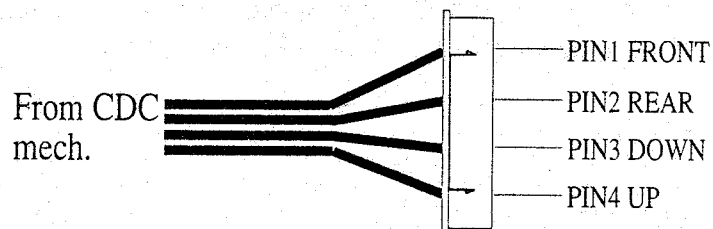


Fig. 2 Item 92 of CDC mechanism

